



FRYE'S

ADVANCED

GEOGRAPHY

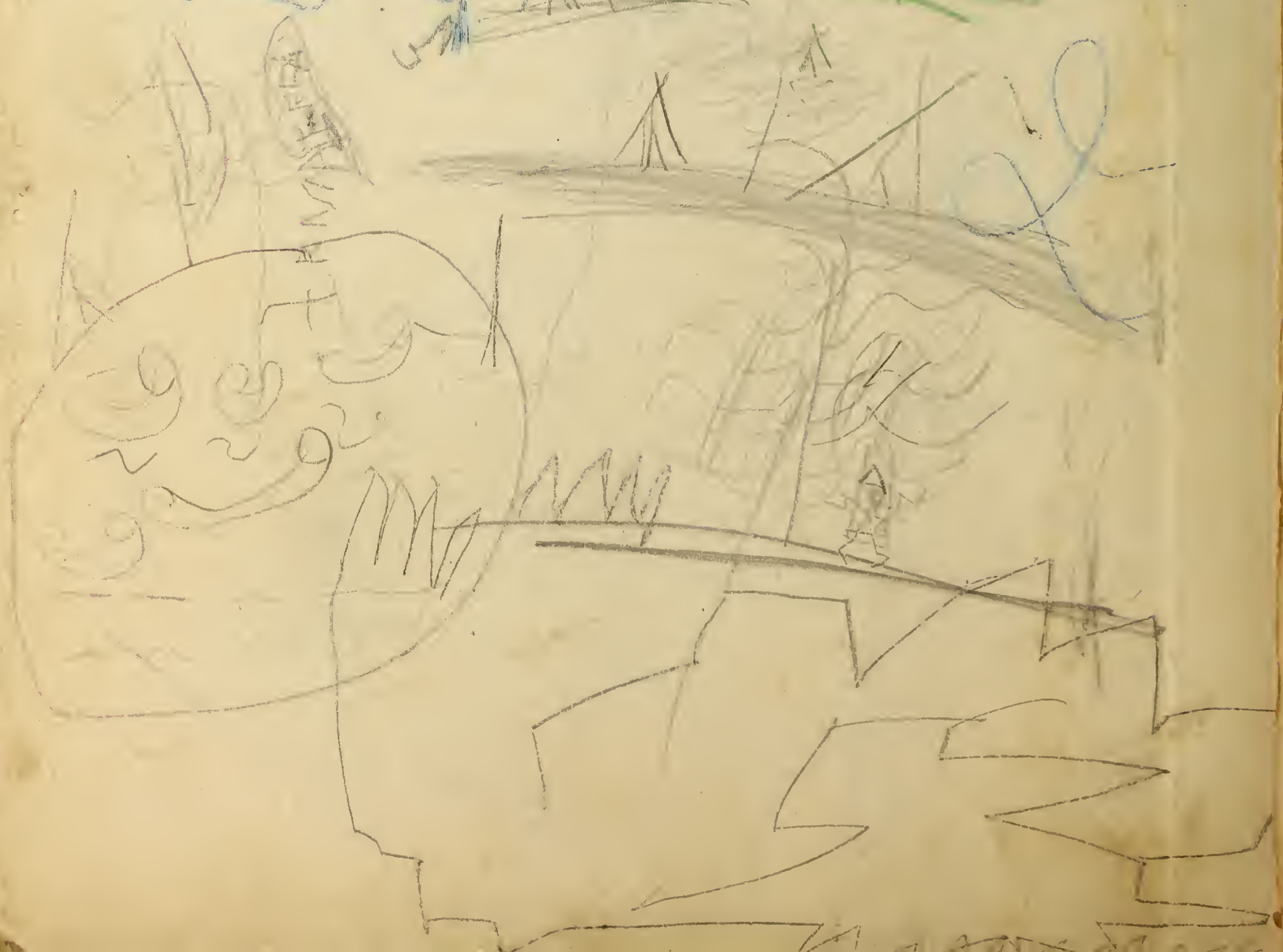
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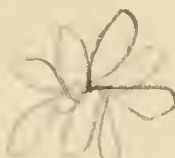


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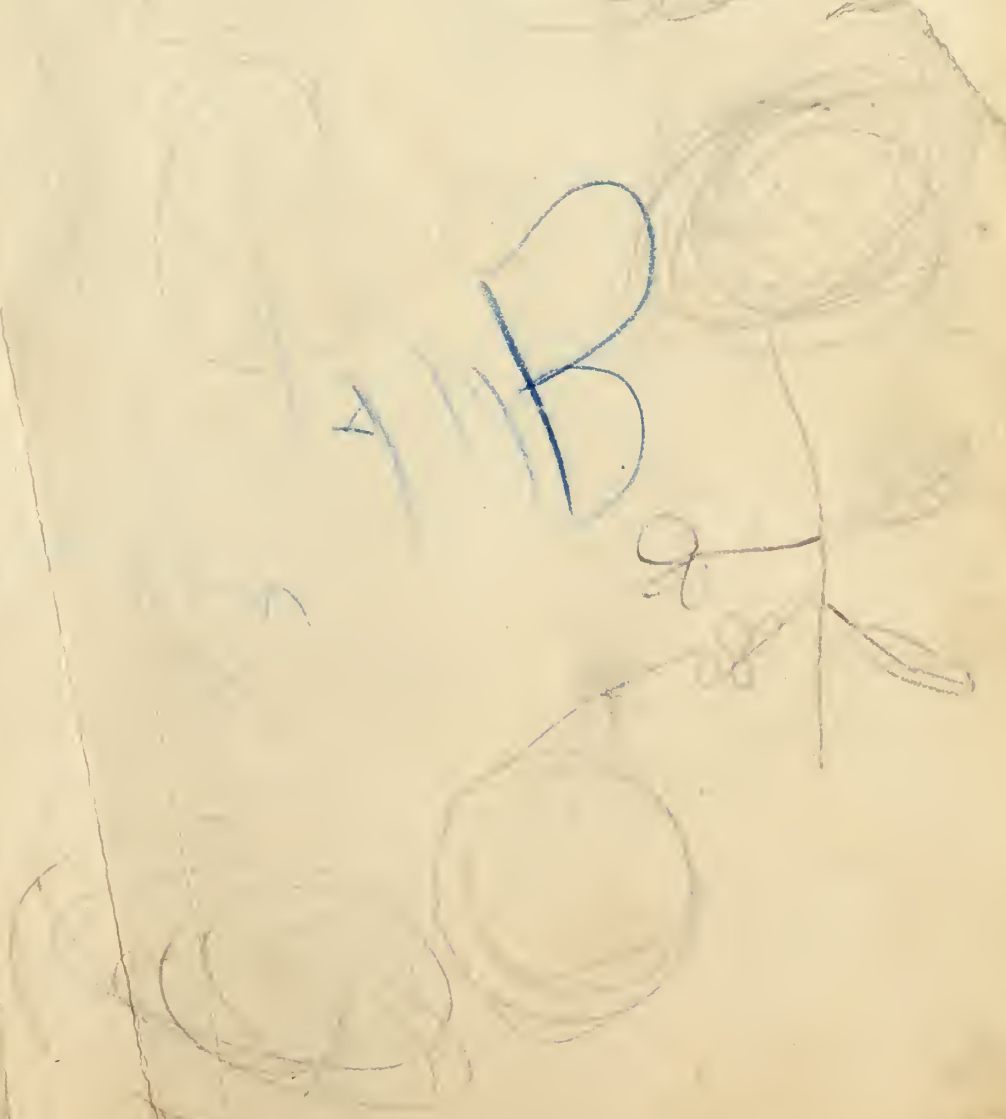
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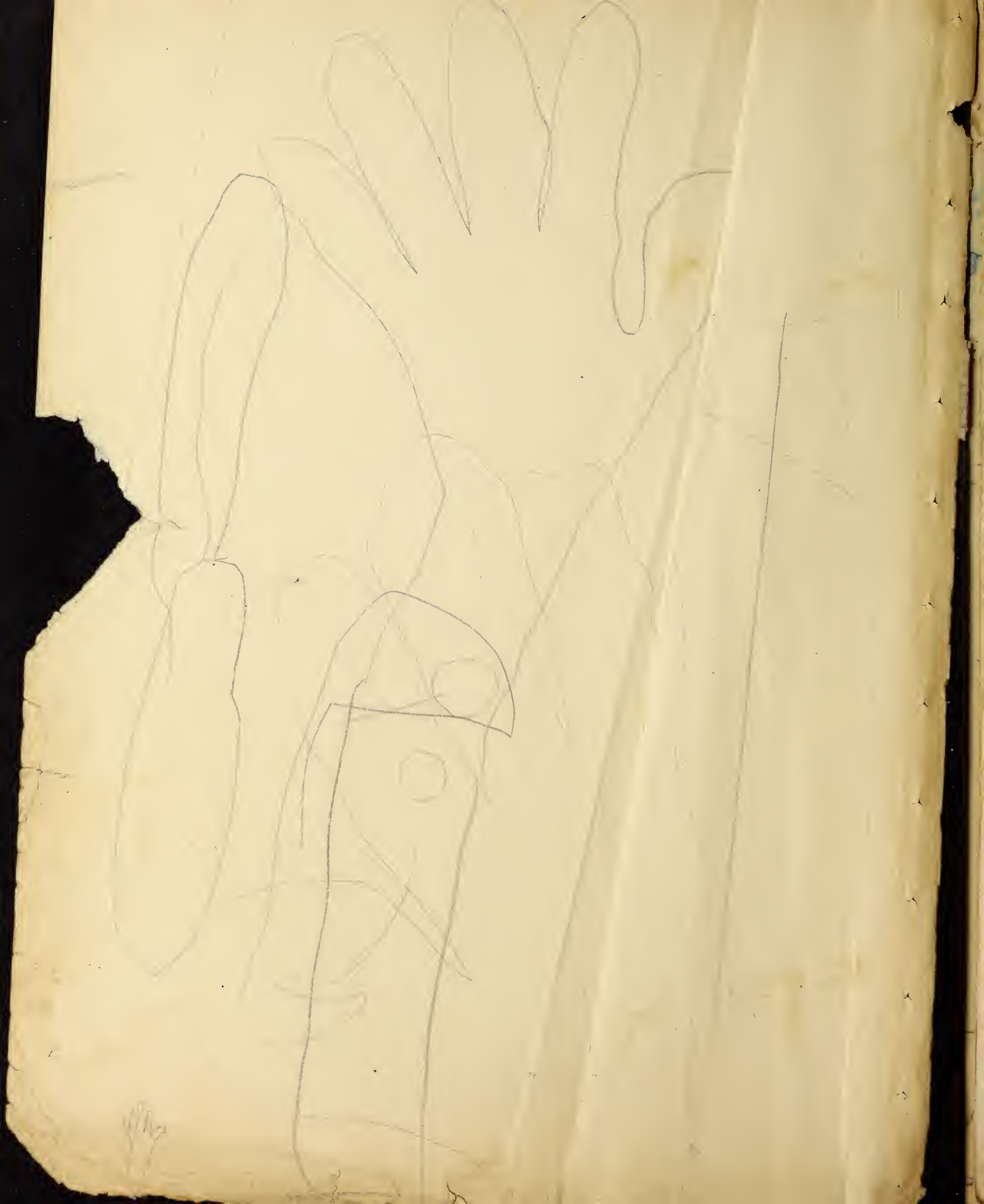
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ADVANCED GEOGRAPHY

BY

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AUTHOR OF "D AND NATURE," "BROOKS AND BROOK BASINS," "PRIMARY GEOGRAPHY,"
"ELEMENTS OF GEOGRAPHY," "COMPLETE GEOGRAPHY," "TEACHERS' MANUAL
OF GEOGRAPHY," "HOME AND SCHOOL ATLAS," ETC., ETC.

BOSTON, U.S.A.
GINN COMPANY, PUBLISHERS

The Athenæum Press

1899

P R E F A C E.

Commerce. A geography that seeks to lay a broad basis for the study of nations must throw a strong search-light upon their commercial relations. Commerce and the related industries take a large place in this book,—those of our own country being illustrated by many original maps (*pages 130 to 140*).

Physical Features. The intelligent study of a country's resources must be based on its physical features. For this reason the surface-forms and climate of the various parts of the world are fully treated in the text and pictures. Much care has also been given to the relief maps.

Illustrations. Nearly all the pictures in this book were engraved directly from photographs. To the selection and grouping of subjects for the photographs, the author has given fully as much time and care as to the text itself. The aim has been to present *characteristic* or *typical forms* that are educative.

Topics. The work is presented in *topics* in such order as will enable pupils to *reason from one step to another*. Pupils should find out what the text tells about each topic and should be able to state the leading facts, not in the words of the book, but in their *own language*. Teachers should question pupils on *topics*.

Examinations should be based on topics broad enough to test thought.

Unity. This book holds the *earth as the unit* before the mind and relates study to that unit. *The memory is thus aided and much time is saved.*

Order of Lessons. Most teachers using this book will doubtless present lessons in the order in which they appear, yet those who wish to complete the study of the United States in detail before giving a broad view of other lands, can readily turn from the early lessons on the natural regions of our country (*pages 30 to 52*) to the study of its people, its industries, its states, etc. (*pages 123 et seq.*).

Sizes of Type. The text which needs the most careful study is in large type. The descriptive matter in small type does not call for close study, but may be used for supplementary reading.

Spelling. In spelling and usage of geographic names, the maps and text follow the rulings of the *United States Board on Geographic Names*.

There has long been confusion in the usage of capital letters. This book adopts what seems to be the best modern usage and allows the capital in *specific names*, such as Rhine and Alps, but not in *class names*, such as river and plateau; thus *Rhine river*. The *United States Board* rules out the dropping of the *the* from names of *places within the United States*.

Acknowledgments. The author wishes to express his gratitude to Professor W. M. Davis, of Harvard University, for his valuable assistance in this work; to Mr. Justin H. Smith, Boston, for many helpful suggestions; to Miss Gertrude Beatrice Wright, of the Normal Art School, Boston, for her skilful assistance in modeling the relief maps.

THE AUTHOR.

Boston, March. 1899.

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TABLE OF CONTENTS.

THE EARTH.		PAGE		PAGE
FORM AND SIZE OF THE EARTH	9	THE ST. LAWRENCE BASIN	45	
THE LAND AND ITS SOIL	10	THE WESTERN PLAINS	47	
SPRINGS AND STREAMS	10	THE PRAIRIES	48	
RIVERS AND RIVER BASINS	10	THE NORTHERN PLAIN	49	
PLAINS	11	GULF COASTAL PLAIN	50	
MOUNTAINS	12	ATLANTIC COASTAL PLAIN	51	
VOLCANOES	13			
WAVES, TIDES AND SHORE FORMS	13	SOUTH AMERICA.		
DIRECTIONS ON THE EARTH	15	SOUTH AMERICA	53	
PRIMARY HIGHLAND OR WORLD RIDGE	16	THE SOUTHERN ANDES	56	
CONTINENTS OR GRAND DIVISIONS	16	THE MIDDLE ANDES	56	
THE OCEANS	17	THE NORTHERN ANDES	57	
LATITUDE AND LONGITUDE	17	THE HIGHLAND OF BRAZIL	58	
BELTS OF HEAT	18	THE GUIANA HIGHLAND	59	
CHANGE OF SEASONS	19	THE SELVAS	59	
ZONES OF LIGHT	20	THE GRAN CHACO AND THE PAMPAS	60	
SEASONS OF THE HEAT BELTS	20	THE LLANOS	61	
WINDS AND RAINFALL	21			
OCEAN CURRENTS	23	ASIA.		
		ASIA	63	
NORTH AMERICA.		THE ALTAI HIGHLAND	64	
NORTH AMERICA	24	CENTRAL BASIN REGION	64	
THE ROCKY MOUNTAINS	30	THE HIGHLAND OF TIBET	65	
THE SIERRA NEVADA	32	HIGHLANDS OF SOUTHWEST ASIA	66	
THE CASCADE RANGE	33	THE ARCTIC AND CASPIAN SLOPES	67	
THE GREAT BASIN	33	THE PACIFIC SLOPE	69	
THE COLORADO PLATEAUS	37	INDIA	70	
THE COLUMBIA PLATEAU	38	ASIATIC ISLANDS	72	
THE COAST RANGE AND VALLEYS	38			
THE YUKON REGION	39	EUROPE.		
HIGHLAND OF MEXICO	40	EUROPE	75	
CENTRAL AMERICA	41	REGION OF THE ALPS	76	
THE APPALACHIAN HIGHLAND	41	THE SPANISH PENINSULA	77	
OLD APPALACHIAN RANGE AND PIEDMONT BELT	42	THE PO AND THE APENNINES	78	
THE GREAT VALLEY AND ALLEGHENY RIDGES	43	THE BALKAN PENINSULA	80	
THE ALLEGHENY PLATEAU	44	THE PLAIN OF HUNGARY	80	
THE LAURENTIAN HIGHLAND	45	THE SCANDINAVIAN PENINSULA	81	
		THE BRITISH ISLES	82	
		LOW EUROPE	84-86	

	PAGE		PAGE
AFRICA.		RAILROADS	
AFRICA	87	AIDS TO COMMERCE	121
EGYPT AND THE NILE	89	TIME BELTS AND INTERNATIONAL DATE LINE	122
NORTHERN AFRICA AND THE SAHARA DESERT	91		
SUDAN	92	THE UNITED STATES.	
THE KONGO BASIN	93	DISTRIBUTION OF PEOPLE	123
SOUTHERN AFRICA	94	GOVERNMENT	124
		CLIMATE,—TEMPERATURE	127
AUSTRALIA.		CLIMATE,—WINDS AND RAINFALL	129
AUSTRALIA	95	COTTON	130
NEW ZEALAND AND OTHER ISLANDS	97	WHEAT AND INDIAN CORN	131
		OATS, BARLEY, RYE AND TOBACCO	132
RACES OF MEN.		FORESTS AND FRUITS	133-134
HOMES OF THE RACES	99	HORSES, MULES AND HOGS	134
THE NEGRO OR BLACK RACE	100	CATTLE, DAIRY PRODUCTS AND SHEEP	135
THE AMERICAN OR RED RACE	101	FISHERIES	136
THE MALAY OR BROWN RACE	102	COAL AND IRON	137-138
THE MONGOLIAN OR YELLOW RACE	103	PETROLEUM AND NATURAL GAS	139
THE CAUCASIAN OR WHITE RACE	104	GOLD AND SILVER	140
RELIGIONS AND GOVERNMENTS	105		
		GROUPS OF STATES.	
PLANTS.		NEW ENGLAND STATES	141
WHERE PLANTS GROW	107	MIDDLE ATLANTIC STATES	142
SOIL, WATER AND HEAT	107	SOUTHERN STATES	146-148
PLANTS OF THE HOT BELT	108	CENTRAL STATES	150-153
PLANTS OF THE WARM BELTS	109	SOUTHWESTERN STATES	154
PLANTS OF THE COOL BELTS	110	NORTHWESTERN STATES	156
PLANTS OF THE NORTHERN COLD BELT	111		
		COUNTRIES AND COLONIES.	
ANIMALS.		CANADA AND NEWFOUNDLAND	162
ANIMALS,—THEIR HABITS AND USES	111	MEXICO, CENTRAL AMERICA, WEST INDIES	162
ANIMALS AND THEIR HOMES	111	THE BRITISH ISLES	164
SOUTH AMERICAN REALM	113	COUNTRIES OF LOW EUROPE,—WESTERN PART	168
NORTHERN REALM	114	MEDITERRANEAN COUNTRIES	171
AFRICAN REALM	116	OTHER COUNTRIES OF EUROPE	171
ORIENTAL REALM	117	COUNTRIES OF SOUTH AMERICA	172
AUSTRALIAN REALM	118	COUNTRIES OF ASIA	176
		COUNTRIES OF AFRICA	179
COMMERCE.		COLONIES OF AUSTRALIA	182
DOMESTIC AND FOREIGN COMMERCE	119		
HIGHWAYS OF TRADE,—WATER ROUTES	119		

INDEX TO TEXT.

NOTE.—All figures refer to pages. Map pages are marked thus, 181°; picture pages are marked thus, 16*. Look first for pages in full face type (37); less important pages are in light face type (173). Lessons titles are in capitals (AFRICA).

A

Abyssinia 180, 181°.
Abyssinia, plateau 89.
Acapulco 161°, 162.
Aconcagua 55°, 56.
Acropolis 80*.
Adelaide 182, 183°.
Adige river 75°, 78.
Adirondack mts. 32°, 46.
Adriatic sea 75°, 79.
Aegean sea 165°.
Afghanistan 175°, 179.
AFRICA 87, 88°, 181°.
Climate 87.
Countries 181°.
Relief map 88°.
Surface 87.
Aguas Calientes 161°.
Akron 151°, 152.
Alabama 138, 147°, 148.
Alamo 149.
Alaska 29°, 39, 40*, 123, 126, 137, 160°.
Albany 144, 145°.
Alberta 161°.
Albuquerque 156, 157°.
Alexandria 179, 181°.
Alhambra 78*.
Algeria 179, 181°.
Algerian 91*.
Algiers 91, 180, 181°.
Allegheny 144, 145°.
ALLEGHENY PLATEAU 32°, 41, 44*, 136, 139.
ALLEGHENY RIDGES 32°, 41, 43, 44, 138.
Alligators 59, 113*, 114*.
Alpacas 57, 113*, 169.
Alpine lakes 78.
ALPS 75°, 76, 77, 84.
ALTAI HIGHLAND 64.
Amazon basin 55°, 59.
Amazon river 55°, 59.
Amazon vs. Kongo 94.
America 9°, 106.
American 104*, 149.
AMERICAN RACE 101, 102.
Amsterdam 86, 169°, 171.
Amur river 63°, 69, 117.
Anam 175°, 178.
ANDES MTS. 53*, 55°, 56, 57*, 113, 140, 173°.
Andorra 77, 106, 169°.
ANIMAL REALMS 111°.
African 116*.
Australian 118*.
Northern 114*.
Oriental 117*.
South American 113*.
ANIMALS 111°-118.
Annual rainfall 129°.
Antarctic circle 20°.
Antarctic ocean 17°.
Ant-eater 113*.
Antelope 117.
Antwerp 86, 169°, 170.
APENNINES 75°, 77, 78, 79.
Apes 116, 117.
Apia 98, 183°.
APPALACHIAN HIGHLAND 35°, 41, 123, 137, 138, 144, 148, 151.
Apteryx 118*.
Arabia 67, 104, 175°, 179.
Arabian sea 66, 175°.
Arabs 91*, 105*.
Aral basin 92.
Aral sea 63°, 68, 69.
Archangel 165°.
Arctic circle 20°, 81.
Arctic ocean 17°.
ARCTIC SLOPE 49, 67.

AREAS OF

Continents 186.
Countries 185.
Earth 24.
Lakes 187.
Oceans 186.
States 188.
Argentina 60, 61, 166, 173°, 174.
Arica 169, 173°.
Arizona 126, 156, 157°.
Arkansas 149°, 150.
Arkansas river 31, 32°.
Armadillo 113*.
Armor plate 139, 146, 166.
Artesian wells 109.
Aryans 104, 105.
Aryan type 104*.
ASIA 62°, 63, 117, 121, 139, 175°, 176.
Climate 63, 64.
Countries 175°, 176.
Relief map 62°.
Surface 62°, 63.
ASIA MINOR, see SOUTH-WEST ASIA.
ASIATIC ISLANDS 72, 175°.
Asiatic Turkey 175°, 179.
Assiniboia 161°.
Assouan 90, 181°.
Asuncion 173°, 174.
Atacama desert 55°, 57, 173°.
Athara river 89°.
Athabasca 161°.
Athens 80, 169°, 171.
Atlanta 146, 147°.
ATLANTIC COASTAL PLAIN 32°, 51, 52, 134, 147.
Atlantic fisheries 137.
Atlantic ocean 17°.
Atlas mts. 89°, 91*.
Attar of roses 80.
Auckland 182, 183°.
Augusta 146, 147°.
Auk 115*, 116.
Austin 149°, 150.
AUSTRALIA 83, 95, 96°, 104-106, 118, 121, 136, 138, 140, 164, 166, 182, 183°.
Climate 95.
Colonies 183°.
Relief map 96°.
Surface 95.
Austrian Alps 95, 97°.
Australians 95*, 97, 100*.
Austria-Hungary 81, 166, 169°.
Axis of earth 19.
Azores 132*.

B
Bahama islands 52, 118, 161°, 162.
Bahia 172°, 173°.
Baku 106*, 175°, 179.
Balearic islands 165°.
Bali 95, 183°.
Balkan mts. 75°, 80.
BALKAN PEN. 75°, 80.
Baltic sea 165°.
Baltimore 120, 131, 133, 136, 144, 145°.
Baluchistan 175°, 179.
Bamboo 73*, 108*.
Banana 108*, 134, 160.
Banca 183°.
Bangkok 175°, 178.
Bangor 133, 141, 143°.
Banks of Newfoundland 41, 136, 161°, 162.

Bantu people 100.
Banyan 73*, 109*.
Bar 14*, 51, 52, 71.
Barbados 161°, 162.
Barcelona 165°, 171.
Barley 56, 110, 132, 158.
Barre 142, 143°.
Barren lands 50.
Barrier reefs 98, 183°.
BASIN REGION OF ASIA 63°, 64.
BASIN REGION OF U. S. 32°, 133.
Basques 78.
Batavia 183°.
Bath 142, 143°.
Baton Rouge 149°.
Batumi 175°, 179.
Bay City 151°, 152.
Bay of Bengal 71, 175°.
Bay of Biscay 165°.
Bay of Fundy 161°.
Beaver 45*, 50, 114*, 115*.
Bedouin 91, 92*.
Belfast 84, 167°, 168.
Belgians 104*.
Belgium 85, 131, 138, 169°, 170.
Bellze 106, 161°.
BELTS OF HEAT 18°.
Benares 175°, 176.
Ben-Nevis 75°, 82.
Berbers 91.
Bergen 165°, 172.
Bering sea 29°, 116, 120°.
Bering strait 29°, 64, 69.
Berlin 86, 169°, 170*.
Bethlehem 67*.
Bighorn 114*.
Big Horn mts. 32°.
Big trees 32*.
Billiton 183°.
Binghamton 145°.
Binue river 89°, 93.
Birmingham, Ala. 147°, 148.
Birmingham, Eng. 167°, 168.
Bismarck 153, 155°.
Bison 114*.
Black forest 85.
Black hills 32°, 48.
Black mts. 43, 147°.
BLACK RACE 100, 105.
Black sea 76, 86, 165°, 172.
Blackstone river 143°.
Bluefields 161°.
Blue Grass region 153.
Blue mts. 95, 97°.
Blue Nile 89°.
Blue ridge 32°, 43.
Boa 113*.
Boar 115*, 116*.
Bogota 173°, 174.
Boise 156, 159°.
Bokhara 175°, 172.
Bolani pass 63°, 66.
Bolivia 113, 140, 169, 173°.
Bolivia, plateau 55°, 56.
Boma 180, 181°.
Bombay, 72, 175°, 176.
Boots and shoes 135, 142, 143.
Bordeaux 169°, 170.
Borneo 72*, 73, 99*, 102, 117, 178, 183°.
Bosphorus 80*, 169°.
Boston 42, 106, 119, 120, 121*, 130, 135, 136, 141*, 143°.
Bradford 167°, 168.

Brahmanists 102, 105.
Brahmaputra river, 63.
65, 71, 175°, 176.
Brass 141, 144.
Brazil 58, 59*, 100, 113, 119, 144, 172, 173°.
BRAZILIAN HIGHLAND 55°, 58.
Breadfruit 97, 108*.
Bridgeport 142, 143°.
British Columbia 161°, 162.
British Guiana 173°, 174.
BRITISH ISLES 82, 83, 97, 124, 131, 132, 164, 167°. See also England, Great Britain, Ireland, Scotland, Wales.
British Museum 80.
British possessions 78, 83, 106, 164, 176.
Brockton 142, 143°.
Brooklyn 43*, 120, 131, 142, 145°.
BROWN RACE 102°, 105.
Brussels 85, 165°, 171.
Budapest 169°, 171*.
Buddhists 102, 105.
Buenos Ayres 61, 173°, 174.
Buffalo 47, 120, 144, 145°.
Buffalo Bayou 149°.
Buffaloes 114, 115*-117*.
Bukharest 165°.
Bulgaria 169°.
Burlington, Iowa 153, 155°.
Burlington, Vt. 142, 143°.
Burma 175°.
Bushmen 94.
Butte 156, 159°.

C

Cabinet woods 60.
Cables, ocean 122.
Cactus 38*.
Cairo 90, 179, 181°.
Calcutta 72, 175°, 176*.
California 32°, 38, 39, 95, 124, 131, 134, 139, 140, 156, 157°.
Callao 173°, 174°.
Cambodia 175°, 178.
Cambridge, Eng. 167°.
Cambridge, U. S. 141, 143°.
Camden 144, 145°.
Camels 64, 67, 92, 112*, 115*, 116*.
Campos 59, 135.
Canada 83, 104, 106, 113, 131, 143, 161°, 162; see Laurentian highland and Northern plain.
CANALS 46*.
China 70.
Holland 85.
Russia 86.
United States 121°.
Canary islands 180, 181°.
Candia, or Crete 169°.
Cantabrian mts. 75°, 78.
Canton, China 68*, 175°, 178.
Canton, Ohio 151° 152.
Canyon of Colo. 37*, K°.
Cape Breton 157°, 161°.
Cape Cod 50, 137, 143°.
Cape Colony 180, 181°.
Cape Fear river 149°.

Cape Hatteras 137, 147°.
Cape Horn 55°, 56*, 124.
Cape of Good Hope 89°, 94, 121.
Cape Town 94, 180, 181°.
Caracas 173°, 174.
Caravans 64, 66, 93, 179.
Cardiff 167°, 168.
Caribbean sea 161.
Caribou 45, 50, 114*.
Carolina highland 32°, 43.
Caroline islands 98, 183°.
Carpathian, see Karpathian.
Carpets 136, 165, 172.
Carson City 156, 157°.
Cascade mts. 32°, 33.
Caspian sea 63°, 68, 69, 86, 92, 165°.
CASPIAN SLOPES 67.
Cassava 59, 93.
Cassiquiare river 55°, 61.
Castes 105.
CATTLE 48, 49, 59-61, 64, 68, 76, 79, 82, 86, 90, 113, 117, 118*, 132, 135°.
Caucasians 102, 104.
Caucasus mts. 75°, 86.
Cavern of Luray 43, 145°.
Cayenne 173°.
Celebes 73, 171, 183°.
CENTRAL AMERICA 41, 101, 113, 161°, 162.
CENTRAL STATES 150, 151°, 153, 155°.
Cevennes 77, 169°.
Ceylon 72, 104*, 175°.
Chalk cliffs, Dover 84*.
Chamois 112*, 114, 115*.
Charcoal 137*, 138.
Charleston, S. C. 52, 130, 146, 149°.
Charleston, W. Va. 145°, 146.
Charlotte 146, 147°.
Chattanooga 148, 149°.
Chautauqua 145°.
Cherokee nation 149°, 150.
Chesapeake bay 52, 133, 136, 145°.
Cheviot hills 83, 167°.
Cheyenne 158, 159°.
Chicago 46, 49, 119*, 121, 131-135, 138, 139, 151°, 152.
Chickasaw nation 149°.
Chile 56, 57, 140, 173°, 174.
Chimborazo 55°, 58*, 79.
Chimpanzee 93, 116*.
China 63°, 64, 69, 70, 103, 109, 119, 175°, 178.
Chinchona 56*, 57.
Chinese 70, 103*, 124.
Chinese empire 175°.
Chinook 129.
Choctaw nation 149°.
Christiania 81, 165°, 172.
Christians 102, 105, 106*.
Cincinnati 150, 151°, 152*.
Cinnamon 72, 73*.
Civil day 122.
Cleveland 47, 120, 139, 150, 151°, 152*.
Cliff dwellings 37*.
CLIMATE OF U. S. 127°, 128°, 129°, 130.
CLIMATIC MAPS, Heat Belts 18°, 21°. Rainfall in U. S. 129°.

CLIMATIC MAPS, Seasons 21°.
Temperature in U. S. 127°, 128°.
Winds 22°, 23°.
Clocks 142, 144, 171.
Cloves 73*.
COAL 44, 49, 83, 85, 86, 137°, 138, 147, 148, 150, 168, 170.
COASTAL PLAINS 11*.
Africa 87.
Llanos 61.
Russia 86.
Siberia 67.
United States 32°, 50-52.
COAST RANGE 32°, 38, 158.
Cochin-China 175°, 178.
Cocoa 57*, 174.
Cocoanuts 72, 97*, 108*.
Codfish 136*, 137°, 162.
Coffee 59*, 67, 73, 144, 161, 172.
Coke 137*, 138.
Cold waves 50.
Colombia 58, 173°, 174.
Colombo 175°.
Colon 161°.
Colorado 140, 154, 157°.
Colorado canyon 37*.
COLORADO PLATEAUS 32°, 37, 38.
Colorado river 31, 32°, 36, 37*.
Colorado Springs 156, 157°.
COLUMBIA PLATEAU 32°, 33, 38.
Columbia river 32°, 33, 38, 39, 158, 159°.
Columbia, S. C. 146, 147°.
Columbus, Ga. 146, 147°.
Columbus, Ohio 151°, 152°.
COMMERCE 119, 121.
Concord 141, 143°.
Condor 57*, 113*.
Connecticut 142, 143°.
Connecticut river, 133, 143°.
Constantinople 80, 106, 169°, 171.
Constitution of U. S. 124.
Consuls 121, 122.
Continental divide 31.
CONTINENTS 16.
Copenhagen 169°, 171.
COPPER 46, 150, 156, 158, 174.
Coral 52, 97, 98*.
Cordoba 173°, 174.
Cordoba, isthmus 75°, 80.
CORN 49, 56, 57, 83, 90, 93, 110, 131°, 132, 140, 146, 150, 152-154.
Cornwall 84.
Costa Rica 161°.
Cotopaxi 55°, 58.
COTTON 43, 51*, 52, 59, 71, 76, 83, 90, 92, 93, 109*, 119, 124, 130°, 132*, 140-150, 166, 170, 171, 176.
Mills 130°, 141-148.
Cotton gin 124.
Cotton-seed oil 130, 150.
Covington 151°, 153.
Coyote 48*.
Creek nation 149°.
Crete, or Candia 169°.
Crocodile 93, 116*, 117*.
Cuba 52, 106, 162, 163°.

Currents of Indian O. 70.
Cutlery 138, 139, 168.
Cuzco 57, 173°.
Cyclones 71.
Cypress swamp 43*.

D

DAIRY 44, 76, 135*, 142, 171.
Dakota farm 49*, 154*.
Dallas 148, 149°.
Damascus 175°, 179.
Danube river 77, 80, 169°.
Dardanelles 169°.
Dates 66, 67, 109, 179.
Davenport 153, 155°.
Dayton 151°, 152.
Dead sea 63°, 71, 72.
Death valley 32°, 36.
Deer 112*, 114*, 115*.
Dekkan 12, 63°, 71, 72.
Delaware 123, 144, 145°.
Delaware bay 52, 145°.
Delaware river 43, 145°.
Delhi 68*, 175°, 176.
DELTA PLAINS 11*.
 Brahmaputra 71.
 China 69.
 Colorado 36.
 Danube 81.
 Ganges 71, 117.
 Mekong 70.
 Mississippi 51.
 Niger 93.
 Nile 90.
 Po 78, 79.
 Rhine 85.
 Rhone 77.
 Yatse, Alaska 11*.
 Yellow 69.
 Zambezi 94.

Denmark 81, 82, 106, 165°, 171.
Denver 31, 48, 154*, 154, 157°.

DESERTS,

Atacama 57, 173°.
 Gobi 63°, 64, 92.
 Kalahari 87, 89°, 94.
 Sahara 87, 90° 91, 92*.

Des Moines 153, 155°.
Detroit 47, 120, 151°, 152*.

Diamonds 94*, 171, 172, 180.
DIRECTIONS 15.
District of Columbia 126, 145°.

DIVIDES 10.

Continental 31.
 India 71.
 Rocky mts. 31.
 South America 61.

Dnieper river 165°.
Dover, Del. 144, 145°.
Dover strait 84*, 167°.
Dresden 169°, 170.
Drowned valley 14*, 39, 45, 120.

Drumlin 49.
Dublin 167°, 168.
Dubuque 153, 155°.
Duluth 120, 153, 155°.
Dundee 167°, 168.
Dunedin 182, 183°.
Dunes 33, 64, 91.
Dutch East Indies 178.
Dutch Guiana 173°, 174.
Dwarf willow 111*.

Dwina river 75°, 86.
Dyaks 72*, 73.
Dyewoods 60, 108.
Dykes 85.

E

EARTH 9.
 Area 24.
 Azis 19.
 Orbit 19*.
 Revolves 19.
 Rotates 15.
Earthquake 12, 13, 58, 76.
East Indies 73, 108, 121, 133, 178.

Eauclaire 151°, 152.
Ebony 108.
Ebro river 75°, 78.
Eclipse 9.
Ecuador 57*, 59, 173°, 174.

Edinburgh 167°, 168.
EGYPT 89, 131, 179, 181°.
Egyptian 89*, 105*.
Eider duck 45*, 116, 115*.
Elbe river 85, 169°.
Elephant 70*, 71*, 89, 93, 116*, 117*.
Elevated railroad 120.
Elk 115*.

England 75°, 82, 83, 119, 120, 130, 132, 135, 164, 167°; see also British Isles and Great Britain.
English channel 167°.
Equatorial rains 22°, 58, 61, 87, 93, 95.

Erie 144, 145°.
Erie canal 43*, 131, 145°.
Ermines 50, 115.
Eskimo 9, 20*, 50, 103*, 114*.

Essequibo river 59, 173°.
Euphrates river 63°, 66.
Eurasia 16°, 68, 75, 103.
EUROPE 75, 105, 106, 117, 121, 135, 139, 164, 165°.
 Climate 75.
 Countries 165°, 169°.
 Relief map 74°.
 Surface 75.
Evansville 151°, 152.

F

Falkland islands 173°.
Fall River 141, 143°.
Fargo 153, 155°.
Fez 180, 181°.
Figs 66*, 67, 109*.
Fiji islands 98, 102, 183°.
Fingal's cave 84*, 167°.
Finland 75°, 86.
Finns 103.
Fiord 14*, 81, 82*.
Fire temple 106*.
Firth of Clyde 167°.
Firth of Forth 167°.
FISHERIES 136*, 137°.
Flax 84, 110, 170, 171.
Flood plains 11*.

Amazon 59.
 Ganges 71.
 Mackenzie 50.
 Mississippi 49*, 50, 51.
 Nile 90.
 Orinoco 61.
 Rhine 85.

Florence 169°, 171.
Florida 52, 118, 123, 134, 137, 147°, 148.

Flour 49, 119, 131, 133.
FORESTS 31-33, 38, 39, 43, 44, 46, 50, 52, 57, 59, 68, 80, 81, 85-86, 87, 92, 93, 97, 110, 111, 133°, 134, 141, 148, 150, 162.
 See also lumber.

FORM OF EARTH 9.
Formosa 175.
Fort Smith 149°, 150.
Fort Wayne 151°, 152.
Fort Worth 148, 149°.

France 77, 78, 84-86, 104, 106, 119, 123, 130, 131, 136, 138, 140, 169°, 170.
Frankfort, Ky. 151°, 153.
Frankfurt, 168*.
Fraser river 33, 161°.
Freetown 180, 181°.
French Guiana 173° 174.
French Indo-China 175°, 178.

Friendly islands 98, 183°.
Fruits 134°.

Fuchau 175°, 178.
Fur seals 39*, 160.
Fujiyama 72, 73*, 175°.

G

Galapagos islands 173°.
Galveston 130, 149°, 150.
Ganges 71, 117, 175°, 176.

Garonne river 169°.
Geneva 169°, 171.
Genoa 169°, 171.
Georgetown 126, 145°.
Georgia 123, 130, 137, 146, 147°.

Geral mts. 55°.
Germany 85, 86, 119, 124, 130-132, 135, 136, 138, 139, 168, 169°.

Geyser 30*, 31, 82.
Ghats, Western 63°, 72.
Giant's Causeway 75°, 84*.

Gibraltar 75°, 78.
Gila river 32°, 157°.
Gilbert islands 98, 183°.
Giraffe 89, 116*.

Gironde river 85, 169°.
Glacial lakes 78, 86.
Glacier 12, 76, 97.
Glasgow 83, 166, 167°.

Glass 44, 86, 144, 170.
Gloucester 137, 143°.
Gnu 116*, 117.

Gobi desert 63°, 64, 92.
God 105.
GOLD 31, 32, 36, 72, 93, 97, 124, 135, 140°, 180, 182.

Golden Gate 39*, 157°.
Gorilla 116*.
Gottenborg 165°, 167, 172.

GOVERNMENTS 105, 124.
Grain 131°, 132°; see also wheat, corn, etc.
Grain elevator 120*.

Grampian hills 167°.
Granada 78, 165°.
GRAN CHACO 55°, 60.

GRAND DIVISIONS 16°.
Grand Manan 14*, 143°.
Grand Rapids 151°, 152.

Grapes 39, 79, 86, 109, 110*, 134°, 170.
GREAT BASIN 32°, 33, 65, 67, 140.

Great Britain 75°, 82-84, 97, 106, 119, 123, 131, 135, 136, 138-140, 163, 167°; see British Isles, England, Ireland, Scotland, Wales.

Great Lakes 32°, 45, 46, 120, 123, 133, 134, 137, 139, 153.

Great Salt lake 32°, 36*.
GREAT VALLEY 32°, 43.
Greece 80, 104, 169°, 171.

Greenland 45, 82*, 106, 111*, 115, 125°.
Green mts. 30*, 32°, 42*.
Greenwich 18, 167°.

Ground water 10.
Guadalquivir river 75, 78.
Guatemala 161°, 162.

Guayaquil 173°, 174.
GUIANA 59, 170, 173°, 174.
Guinea, 181°.

GULF COASTAL PLAIN 32°, 43, 44, 50, 51, 134.
Gulf of Bothnia 165°.
Gulf of California 125°.

Gulf of Finland 165°.
Gulf of Guayaquil 55°.
Gulf of Guinea 181°.

Gulf of Mexico 125°.

Gulf of St. Lawrence 125°.

Gulf stream 23, 24, 52, 81, 128.

Gum arabic 108*.

Guthrie 149°, 150°.

H

Habana; see Havana.
Haiti 162, 163°.

Hakodate 175°.
Halibut 41, 136.
Halifax 158, 161°, 162.

Hamburg 86, 169°, 170.
Hamilton 158, 161°, 162.
Hamites 93, 104, 105°.

Hanoi 175°, 178.
Harbors 14, 52, 120, 121.
Harrisburg 144, 145.

Hartford 142, 143°.
Harvard University 141.
Hastings 75°, 84*, 167°.

Havana 52, 162, 163°.
Haverhill 141, 143°.
Havre 169°, 170.

Hawaiian ids. 98*, 183°.
HEAT BELTS 18°, 21°.
Heat equator 21°.

Hebrides 167°.
Heights 179.
Hekla 25°.

Helena 158, 159°.
Hemispheres 15°, 120°.
Hemp, Sisal 162.

Herat 175°.
Hides 135, 158, 162, 174, 180.

HIGHWAYS OF TRADE 119.
Himalaya mts. 63°, 64*, 65*, 66, 70, 71, 92, 114, 117.

Hindustan mts. 63°, 66.
Hindu religion 176.
Hindus 71*, 72, 99*, 104*.

Hippopotamus 116*.
Hoangho 63°, 69.
Hobart 182, 183°.

Hoboken 145°.
Hogs 49, 80, 114*, 132, 134°.

Holland 85*, 86, 169°, 171.
Holyoke 141, 143°.

HOMES OF RACES 99*.
Honduras 161°, 162.
Hongkong 70, 175°, 178.

Honolulu 98*, 182, 183°.
Horses 60, 67, 68, 86, 92, 114, 117*, 134.

Hot spring 30*, 31.
Hot Springs 149°, 150.
Hot waves 50.

Houston 149°, 150.
Hudson bay 45, 50, 125°.
Hudson river 43*, 50, 131.

Hudson valley 123, 144.
Hué 175°, 178.
Hugli river 170, 175°.

Humboldt river 32°, 36.
HUNGARY 80, 133, 169°, 171.

Hydraulic mining 140*.

I

Iberian peninsula 77.
Ibex 114, 115*.

ICE AND SNOW 12.
Ice floe 20*.
Ice jam 50.

Iceland 82, 165°.
Ice sheet 42, 45, 49, 81, 86.

Idaho 141, 158, 159°.
Illinois 135, 138, 151°, 152.

Immigrants 124.
Incas 57.

INDIA 70, 71, 83, 99*, 105, 106, 108, 109, 117, 131, 133, 140, 175°, 176.

Indiana 140, 151°, 152.

Indianapolis 151°, 152.

Indian ocean 17°.

INDIANS 41, 45, 50, 59, 60*, 99*, 101*, 113, 123, 132, 157, 158*, 187.

Indian Territory 101, 126, 149°, 150.

India-rubber 60, 94, 108*.
Indo-China 63°, 178.
Indus river 63°, 65, 71.

Inland climate 128.
INTERNATIONAL DATE LINE 120°, 122.

Iowa 153, 155°.
Iran plateau 66, 92.
Ireland 82*, 83*, 84*, 85*, 162*, 163, 167°.

Irkutsk 175°, 179.
IRON 44, 46, 77, 81, 83, 85, 86, 138*, 139, 142, 144, 148, 150, 152, 166.

Iron gate 77*, 80.
IRRIGATION IN
 Altai highland 64.

Asiatic Russia 179.
 California 39.
 Chile 56*.

Euphrates 66.
 Great Basin 36.
 India 71.

Iran 66.
 Nile valley 90.
 Northern Africa 91.
 Po valley 79.

Warm belts 109.
 Western plains 31, 47, 48, 129.

Italy 75° 78, 79, 119, 124, 134, 169°, 171.

Itasca lake 153°.
Ivory 92-94, 104, 116, 180.

J

Jackson 147°, 148.
Jacksonville 147°, 148.

Jaguar 113*.
Jamaica 162, 163°.

James river 43, 52, 145°.
Japan 68, 72, 73, 106, 109, 114, 119, 140, 175°, 178.

Japan current 40.
Japanese 73, 103*.

Java 72*, 73, 102*, 171, 183°.

Jefferson City 153, 155°.
Jersey City 120, 144, 145°.

Jerusalem 175°, 179.
Jetties 39, 47*.

Jews 102, 105*.
Johannesburg 180, 181°.

Jordan river 67.
Juneau 160°.

Jura mts. 75°, 76°, 77.

K

Kabul 175°, 179.

Kadiak 126°.

Kaffirs 94*, 100*.

Kalahari 87, 89°, 94.

Kamchatka 175°.

Kamerun mts. 89°, 93.

Kangaroo 118*.

Kano 93, 181°.

Kansas 131, 154, 155°.

Kansas City, Kan. 48, 154, 155°.

Kansas City, Mo. 153, 155°.

Karakoram mts. 63°, 65.

Karpathian mts. 75°, 77.

Kashmir 65*, 66, 104*.

Keewatin 161°.

Kenia 89°, 93.

Kentucky 151°, 153.

Kerosene 139.

Key West 147°, 148.

Khaibar pass 63°, 66*.

Khelat 175°, 179.

Khiva 175°, 179.

Kilauea 98, 183°.

Kilimanjaro 89°, 93.

Kimberley 94*, 180, 181°.

Kingston 162, 163°.

Klondike 158, 160°.

Knoxville 147°, 148.

Kong mts. 89°, 92.

Kongo river 89, 93*, 95.
Kongo state 93, 180, 181°.
Kongo vs. Amazon 94.
Koran 105.
Korea 175°, 178.
Kuenlun mts. 63°, 65.
Kuka 93, 181°.
Kyoto 175°, 178.

L

Labrador 45, 161°.
Labrador current 128.

Lachine rapids 24*.
La Crosse 151°, 152.
Ladrone islands 98, 183°.

Lagoon 14*, 51, 79, 97.
LAKE PLAINS 11*.
 Caspian 69.

Hungary 80.
 Kashmir 65*, 66.
 Prairies 48.

Red river 48.

LAKES,
 Baikal 67, 175°.

Champlain 43, 143°.
 Como 75°, 78.

Erie 134, 137, 153°.
 Garda 75°, 78.

Geneva 75°, 76, 77.
 George 42*, 43, 145°.

Huron 32°, 46, 153°.
 Killarney 75°, 84.

Ladoga 165°.
 Lucerne 76

- Llama 57, 58, 113*.
 LLANOS 55°, 61, 135.
 Lobster 112*, 136*, 137*.
 Lochs 82.
 Locomotives 139, 141.
 Loire 169°.
 Lombok 95, 183°.
 London 83*, 120, 166, 167°.
 Long Island 50, 143°.
 LONGITUDE 17, 18.
 Longs peak, 31, 32°.
 Lorelei 86*.
 Los Angeles 156, 157°.
 Lotus 90*, 108*.
 Louisiana 148, 149°.
 Louisville 133, 151°, 153.
 Lowell 130, 141, 143°.
 Lower California 33*, 161°.
 LOW EUROPE 80, 84, 86, 104, 168.
 LUMBER 55, 133°*, 134; see also forests.
 Lynchburg 145°, 146.
 Lynn 141, 143°.
 Lyon 169°, 170.
 Lyre bird 118*.
- M**
 Mackenzie river 25°, 50, 68.
 Mackerel 136*, 137°.
 Macon 146, 147°.
 Madagascar 94, 102, 180, 181°.
 Madeira river 55°, 59.
 Madison 151°.
 Madras 72, 170*, 175°, 176.
 Madrid 165°, 171.
 Maelstrom 81, 165°.
 Magdalena river 55°, 58.
 Magellan strait 55°, 56.
 Magnetic pole 125°.
 Mahogany 108.
 Mails 122.
 Maine 141, 143°.
 Makassar 183°.
 Malaga 165°, 171.
 Malay peninsula 175°.
 MALAY RACE 73, 102°*.
 Mammoth cave 43, 151°.
 Managua 161°.
 Manchester canal 167°.
 Manchester, Eng. 167°, 168.
 Manchester, N. H. 141*, 143°.
 Manchuria 175°.
 Mandalay 175°, 176.
 Manila 73, 183°.
 Manitoaba 158, 161°.
 Manufacturing 130°, 131, 133-135, 136°, 138°, 139, 141, 146, 148-152, 166, 168.
 Maori chief 102*.
 Map drawing 186°.
 MAPS; see climatic, political, production, relief.
 Marathon 75°, 77*, 80.
 Marble 143.
 Marseille 169°, 170.
 Marshall islands 98, 183°.
 Marthas Vineyard 137, 143°.
 Maryland 123, 144, 145°.
 Maskat 175°, 179.
 Massachusetts 123, 135, 137, 141, 143°.
 Mauna Loa 98, 183°.
 Meat 134°, 135°, 136°.
 Mecca 175°, 179.
 MEDITERRANEAN COUNTRIES 169°, 171.
 Mediterranean sea 118, 165°.
 Mekong river 63°, 70.
 Melbourne 174*, 182, 183°.
 Memphis 51, 147°, 148.
 Mercury freezes 128.
- Meriden 142, 143.
 Meridian 147°, 148.
 Meridian of Greenwich 18, 167°.
 Merrimac river 143°.
 Mersey river 83, 163, 167°.
 Mesa 37*.
 Mexicans 41*, 104*.
 Mexico, city, 41, 159, 161°, 162.
 Mexico, country, 30, 40, 57, 101, 123, 137, 140, 161°, 162.
 Miami valley 49*, 151°.
 Michigan 151°, 152.
 Micronesia 98, 183°.
 MIDDLE ATLANTIC STATES 142, 145°.
 Middle basin 63°, 64, 92.
 Middle park 30, 32°.
 Milan 79, 169°, 171.
 Military academy 144.
 Millet 70, 71.
 Milwaukee 47, 120, 151°, 152.
 Minneapolis 49, 131, 133, 154*, 153, 155°.
 Minnehaha falls 24*.
 Minnesota 153, 155°.
 Mississippi 147°, 148.
 Mississippi river 31, 32°, 47, 51, 119.
 Mississippi vs. Nile 90.
 Missouri 153, 155°.
 Mitchell's peak 32°, 43.
 Mobile 146*, 147°, 148.
 Mocha 175°, 179.
 Modeling 186°.
 Mohammedans 102, 105.
 Mohave desert 32°, 36, 154*, 157°.
 Mohawk valley 43*, 123, 134, 142, 145°.
 Monaco 78*, 169°.
 Monarchy 105.
 Mongolia 175°.
 MONGOLIAN RACE 102°, 103.
 Monkey 113*, 117*.
 Monrovia 180, 181°.
 Monsoons 22°, 70.
 Montana 140, 156, 159°.
 Mont Blanc 75°, 76*, 77.
 Montenegro 169°.
 Montevideo 61*, 173°, 174.
 Montgomery 147°, 148.
 Montpelier 142, 143°.
 Montreal 46, 161°, 162.
 Moon and tides 13*.
 Moors 77, 78*, 91, 105*.
 Moose 45, 114*.
 Moraine 49, 86.
 Morocco 180, 181°.
 Moscow 86*, 165°, 172.
 Mosque 106*.
 Mosses 50*.
 Moultrie, fort, 146*.
 MOUNTAINS 12*.
 Fold 44*.
 Heights 179.
 Mt. Ararat 63°, 67.
 Mt. Blanc 75°, 76*, 77.
 Mt. Ceniz tunnel 75°, 79.
 Mt. Elburz 75°, 86.
 Mt. Etna 75°, 79.
 Mt. Everest 63°, 65*.
 Mt. Hamilton 38°, 157°.
 Mt. Hecla 75°, 82.
 Mt. Hood 30*, 32°, 33.
 Mt. Kenia 89°, 93.
 Mt. Kilimanjaro 89°, 93.
 Mt. Logan 40, 93, 126°.
 Mt. Mansfield 42*, 143°.
 Mt. Mitchell 32°, 42*, 43.
 Mt. Ranier 32°.
 Mt. San Francisco 32°.
 Mt. Shasta 32°, 33*.
 Mt. St. Elias 40*, 126°.
 Mt. Washington 42, 143°.
 Mt. Whitney 32°, 32.
 Mulberry 73, 77, 79, 109.
 Mules 134.
 Munich 169°, 170.
- Murray river 95, 97°.
 Music boxes 171.
 Musk deer 65.
 Muskegon 151°, 152.
- N**
 Nanling mts. 63°, 69.
 Nantucket 143°.
 Naples 79, 169°, 171.
 Narragansett bay 143°.
 Nashville 147°, 148.
 Nassau 162, 163°.
 Natchez 147°, 148.
 Natural bridge 42*, 43.
 NATURAL GAS 139, 140.
 Naval academy 146.
 Nebraska 153, 155°.
 Negritos 73.
 NEGRO RACE 41, 90, 92-94, 99*, 100, 102°, 124, 188.
 Negro river 59, 89°.
 Nelson river 29°, 50.
 Netherlands; see Holland.
 Nevada 140, 156, 157°.
 New Albany 151°, 152.
 Newark 144, 145°.
 New Brunswick 158, 161°.
 NEW ENGLAND 42, 119, 130, 133, 135, 136, 141, 143°.
 New England highland 32°, 42.
 Newfoundland 41, 161°, 162.
 Banks 136, 161°.
 New Guatemala 161°, 162.
 New Guinea 97, 100.
 New Hampshire 123, 141, 143°.
 New Haven 142, 143°.
 New Jersey 123, 137, 144, 145°.
 New Mexico 126, 156, 157°.
 New Orleans 51, 119, 130, 148, 149°.
 Newport, Ky. 151°, 153.
 Newport, R. I. 142, 143°.
 New South Wales 175, 183°.
 New York bay 52.
 New York city 43*, 83, 120, 131-133, 135, 142, 145°.
 New York, port 120.
 New York state 123, 133, 135, 136, 139, 142, 145°.
 NEW ZEALAND 97, 118, 136, 182, 183°.
 Niagara falls 46*, 145°.
 Nicaragua 41, 161°, 162.
 Nicaragua canal 41.
 Niger river 89°, 92, 93.
 NILE RIVER 89°, 90, 116, 174.
 Nile vs. Mississippi 90.
 Nizhni Novgorod 165°.
 Norfolk 130, 145°, 146.
 Norsemen 81.
 NORTH AMERICA 24, 25°, 28°, 125°, 158.
 Climate 53, 127°-129°.
 Countries 25°, 123, 125°, 158.
 Relief maps 28°, 32°, 34°-35°.
 Surface 24-52.
 North cape 81*, 165°.
 North Carolina 123, 146, 147°.
 North Dakota 153, 155°.
 NORTHERN AFRICA 91.
 NORTHERN PLAIN 29°, 49, 50.
 North park 30, 32°.
 North sea 85, 165°.
 North star 15.
 NORTHWESTERN STATES 158, 159°.
 Northwest Territory 158, 161°.
- Norway 81*, 165°, 172.
 Nova Scotia 158, 161°.
 Nubia 181°.
- O**
 Oahu 98, 183°.
 Oakland 156, 157°.
 Oasis 91, 92*.
 Oats 110, 132°.
 Ob river 63°, 68.
 OCEAN CURRENTS 23°.
 Ocean routes 120°, 121.
 OCEANS 17°.
 Oder river 85, 169°.
 Odessa 86, 165°, 172.
 Ogden 156, 157°.
 Ohio 138-140, 145, 150, 151°.
 Oil; see petroleum.
 Oil-cake 130, 150.
 Okhotsk sea 63°, 64.
 Oklahoma 126, 149°, 150.
 OLD APPALACHIAN RANGE 41-43.
 Olive 67, 79, 109, 162.
 Olympia 158, 159°.
 Omaha 153, 155°.
 Oman 175°, 179.
 Ontario 158, 161°.
 Opium 108*, 176.
 Oporto 165°, 171.
 Orange river 89°, 94.
 Oranges 38*, 39, 52, 78, 79, 109, 134°.
 Orang-outan 117*.
 Orbits 19*.
 Orchard fruits 110, 134°.
 Oregon 158, 159°.
 Orinoco river 55°, 61, 113.
 Orizaba 40.
 Orkney islands 167°.
 Ornithorynchus 118*.
 Osaka 177°, 178.
 Oshkosh 151°, 152.
 Ostrich 93, 94, 116*.
 Ottawa 161°, 162.
 Otters 50, 115.
 Ottoman Empire 166, 173, 174.
 Oxford 167°, 168.
 Oyster 118, 136*, 137°.
 Ozark highland 32°, 44.
- P**
 Pacific fisheries 137°.
 Pacific islands 97, 102, 118, 175°.
 Pacific ocean 17°.
 Pagans 102, 105.
 Pagoda 106*.
 Palm oil 93, 94, 180.
 Palms 60*, 108.
 Pamir plateaus 63°, 66.
 PAMPAS 55°, 60, 113.
 Panama 53, 55°*, 58, 124, 173°, 174.
 Paper 141.
 PAPUA 97, 100.
 Para 60, 168, 173°, 174.
 Paraffin 139.
 Paraguay 173°, 174.
 Paraguay river 55°, 61.
 Parallels 18°.
 Parana river 55°, 60.
 Paris 164*, 169°, 170.
 Parkersburg 145°, 146.
 Parliament 164*.
 Parrot 113*, 118*.
 Parsees 104*.
 Parthenon 80.
 Passes of Alps 79*.
 Patagonia 57, 60.
 Paterson 144, 145°.
 Pawtucket 142, 143°.
 Peaches 52, 134°.
 Pearls 118.
 Peat 84.
 Pecary 113*, 114*.
 Pecos 32°, 48*.
 Pekin 172, 175°, 178.
 Pennsylvania 123, 135, 136, 138-140, 144, 145°.
- Penobscot river 133, 143°.
 Pensacola 147°, 148.
 People in U. S. 123, 124°.
 Peoria 151°, 152.
 Pepper 73*.
 Pernambuco 58*, 172, 173°.
 Persia 66, 175°, 179.
 Persian gulf 63°, 66.
 Peru 57, 101, 113, 140, 173°, 174.
 Peruvian bark 56*, 168.
 Petersburg 145°, 146.
 PETROLEUM 44, 86, 115, 139°*, 140, 144*, 179.
 Phenix 156, 157°.
 Philadelphia 120, 123, 124, 135, 136, 138, 139, 144, 145°.
 Philippine islands 73, 175°, 178; Sup.
 Phosphate 147.
 PIEDMONT BELT 32°, 41, 42, 43, 133.
 Pierre 153, 155°.
 Pikes peak 31, 32°.
 Pindus mts. 80.
 Pisa 80, 169°.
 Pittsburgh 44, 138, 139, 144, 145°.
 Plain of China 63°, 69.
 PLAIN OF HUNGARY 80.
 Plantain 93, 108.
 PLANT BELTS 107-111.
 Plata river 55°, 58, 60, 61.
 Plata valley 60, 61.
 PLATEAUS.
 Abyssinia 89°.
 Bolivia 55°, 56, 57.
 Mexico 29°, 40.
 Tibet 63°, 65.
 Platte river 30, 32°, 158*.
 Phom Penh 171, 175°, 178.
 Polar bear 112*, 114*.
 Polar currents 23°, 45.
 Pole, magnetic 125°.
 POLITICAL MAPS.
 Africa 181°.
 Alaska 160°.
 Asia 175°.
 Australia 183°.
 British Isles 167°.
 Canada 159, 161°.
 Central America 161°.
 Central Europe 169°.
 Central States 151°, 155°.
 Europe 165°.
 Mexico 161°.
 Middle States 143°.
 New England 145°.
 North America 25°.
 Northwestern States 159°.
 South America 173°.
 Southeast Asia 177°.
 Southern States 147°, 149°.
 Southwestern States 157°.
 United States 126°.
 West Indies 163°.
 Pompeii 79*.
 Popocatepetl 29, 40, 41*, 159°.
 POPULATION 99-104.
 Center 124°.
 Cities 124°, 185, 189.
 Countries 177.
 States 188.
 United States 124°.
 World 99, 102, 185.
 Porcelain 103, 164.
 Po river 75°, 77-79.
 Pork 134°, 135.
 Port au Prince 160, 161°.
 Portland, Me. 141, 143°.
 Portland, Ore. 158, 159°.
 Porto Rico; see Puerto Rico.
 Port Said 87, 90*, 181°.
 Portsmouth 141, 143°.
- Portugal 77, 104, 165°, 171.
 Potomac river 43, 145°.
 Potosi 173°, 174.
 Pottery 144*, 172*.
 PRAIRIES 32°, 48, 49*, 114, 119, 123, 131, 132, 133, 135, 136.
 Pretoria 180, 181°.
 Pribilof islands 39*, 40, 116, 126°, 160°.
 PRIMARY HIGHLAND 18.
 Prince Edward I. 160, 161°.
 PRODUCTION MAPS 130-141.
 Cattle 135.
 Coal 137.
 Corn 131.
 Cotton 130.
 Dairying 135.
 Fisheries 136.
 Forests 133.
 Fruits 134°.
 Gold 140.
 Hoops 134.
 Iron 138.
 Oats 132.
 Petroleum 139.
 Sheep 135.
 Silver 140.
 Tobacco 132.
 Wheat 131.
 Providence 142, 143°.
 Ptarmigan 50*, 114*.
 Pueblo 101*, 156, 157°.
 Puerto Rico 162, 163°.
 Puget sound 39, 158, 159°.
 Puma 113, 114*.
 Puno 56*, 57, 171°.
 Pyramid 89*, 90, 181°.
 Pyrenees mts. 77, 165°.
- Q**
 Quagga 116*, 117.
 Quebec 161°, 162.
 Queensland 175, 183°.
 Quicksilver 32, 38.
 Quincy, Ill. 151°, 152.
 Quinine 57; see Peruvian bark.
 Quito 55°, 57, 173°, 174.
- R**
 RACES OF MEN 99-104, 102°.
 Racine 151°, 152.
 RAILROADS 119, 121°.
 Time Belts 122°.
 Rails 138, 139, 144, 166.
 RAINFALL 21, 22, 129.
 Raised maps; see relief.
 Raisins 80, 134.
 Raleigh 146, 147°.
 Rangoon 175°, 176.
 Reading 144, 145°.
 RED RACE 101, 102°.
 Red river 32°, 149°.
 Red river prairies 48, 50, 153, 162.
 Red sea 67, 118, 175°.
 Redwood forests 38.
 Reindeer 50, 68, 81, 115*.
 Reindeer moss 50*, 68.
 RELIEF MAPS.
 Africa 88.
 Animal realms 111.
 Asia 62.
 Australia 96.
 Europe 74.
 North America 29.
 Primary highland 16.
 Races 102.
 South America 54.
 United States 32, 34.
 World ridge 16.
 RELIGIONS 105.
 Republics 106.
 Reservations 101, 187.
 Revolution of earth 19.
 Rhine river 75°, 76, 85, 86*, 169°, 170.
 Rhinoceros 116*, 117*.

Rhode Island 123, 142, 143°.
Rhône river 75°, 76, 77, 167, 169°.
Rice 51, 52*, 71, 73, 90, 146, 176.
Richmond 52, 133, 145°, 146.
Riga 165°, 172.
Rio de Janeiro 58, 172, 173°.
Rio Grande 30, 31, 32°, 47*, 50, 113.
Rio Negro 55°, 61.
Rivers 10.
Rochester 49, 144, 145°.
Rocky mts. 30, 31, 32°, 39, 76, 124, 140.
Rome 79, 80, 169°, 171.
Rosin 52, 146.
Rotation of earth 15.
Rotterdam 169°, 171.
Roumania 169°.
Roumelia 169°.
Routes of Trade 119, 120°, 121°.
Rubber 60, 142, 174.
Russia 64, 85*, 86, 106, 119, 124, 131-133, 136, 165°, 171.
Russian oil 139; see Baku.
Rutland 142, 143°.
Rye 110, 132.

S

Sable 114*, 115.
Sacramento 156, 157°.
Sagebrush 31*, 47, 110*.
Saginaw 151°, 152°.
Saginaw bay 151°, 152°.
SAHARA DESERT 87, 91*, 92*, 93, 104, 114, 174, 181°.
Saigon 175°, 178.
St. Albans 142, 143°.
St. Bernard pass 79*.
St. Gotthard 75°, 76*, 79.
St. Helena 85, 181°.
St. John 161°, 162°.
St. John's 161°, 162°.
St. Joseph 153, 155°.
ST. LAWRENCE BASIN 32°, 43, 45.
St. Lawrence river 45, 46, 120, 123, 161°.
St. Louis 131-133, 153, 155°.
St. Mark's 167*.
St. Marys strait 46*, 151°.
St. Paul 153, 155°.
St. Peter's 171.
St. Petersburg 86, 165°, 171.
Salem, Ore. 158, 159°.
Salmon 39, 45, 67, 137°, 160.
Salt 86, 144, 152.
Salt desert 66, 175°.
Salt Lake City 36, 156, 157°.
Salvador 161°, 162°.
Samoa 97*, 98*, 183°.
San Antonio 149°, 150.
Sand bars 14*.
Sandwich islands; see Hawaiian islands.
San Francisco 38, 39*, 98, 120, 124, 131, 156, 157°.
San Francisco river 55°, 58.
Sangay 58.
San Jose 161°.
San Juan 160, 161°.
San Luis park 30, 32°.
San Marino 75°, 79, 80*, 106.
San Salvador 161°.
Santa Fe 156, 157°.
Santiago 173°, 174°.
Santiago, Cuba 163°.
Santo Domingo 162, 163°.
Santos 172, 173°.
Saone river 75°, 77°.
Sardinia 169°.
Saskatchewan 161°.
Savannah 52, 130, 146, 147°.
SCANDINAVIAN PENINSULA 75°, 81°.
Scotland 82, 83*, 104*, 163, 167°.
Scranton 144, 145°.
Sea islands 130.
Seal 39*, 40, 67, 68, 81, 112*, 114*.
Sea of Azov 165°.
Sea of Galilee 67°.
Seaports 120.
SEASONS 19, 20, 21°.
Seattle 158, 159°.
Seine river 169°.
SELVAS 53, 55°, 59, 113.
Semites 102°, 104, 105*.
Senate 123*, 125°.
Seoul 175°, 178°.
Servia 165°.
Shanghai 70, 175°, 178°.
Shannon river 84*, 167°.
Sheep 60, 61, 64, 68, 82, 86, 90, 94, 97, 113, 114*, 118*, 135, 136°, 144, 148, 156, 162, 179.
Sheffield 167°, 168°.
Shetland islands 167°.
Shipbuilding 141*, 144*, 166.
SHORE FORMS 14*, 15°.
Shoshone falls 38*, 157°.
Shreveport 148, 149°.
Siam 175°, 178°.
Siberia 67, 68, 103, 140, 175°, 178°.
Siberian railroad 175°, 178°.
Sicily 79, 169°.
Sierra Leone 180, 181°.
Sierra Madre 29°, 162°.
SIERRA NEVADA 32°, 124, 136°.
Silk 68*, 70, 73, 76, 77, 79, 103, 109, 144, 170, 171°.
Silver 31, 36, 57, 124, 135, 140°, 156, 162, 174°.
Simoon 91°.
Singapore 72*, 175°.
Sioux City 153, 155°.
Sioux falls 153, 155°.
Sisal hemp 159°.
Sitka 130°.
Slate 141*.
Slaves 100, 101, 124°.
Smyrna 175°, 179°.
Snake river 31, 32°, 38°.
Snow and Ice 12°.
Snow-line 56, 58°.
SOIL AND PLANTS 107°.
"Soo" canal 46*.
South Africa 140, 181°.

South African Rep. 181°.
SOUTH AMERICA 53, 101, 113, 172, 173°.
Climate 53°.
Countries 168, 173°.
Relief map 54°.
Surface 53°.
South Australia 175, 183°.
South Bend 151°, 152°.
South Carolina 123, 130, 146, 147°.
South Dakota 140, 153, 155°.
SOUTHERN PLAIN 50, 83, 90, 100, 119, 124°.
SOUTHERN STATES 146, 147°, 148, 149°.
South park 30, 32°.
South Sea islanders 98°.
SOUTHWEST ASIA 66, 67, 175°.
SOUTHWESTERN STATES 154, 157°.
Spain 77, 78, 104, 106, 123, 165°, 171°.
Spaniards 57, 73, 78*, 123, 134, 171°.
Sphinx 80*, 90°.
Spices 73*.
Spitzbergen 175°.
Spokane 158, 159°.
Sponges 118, 137°, 148, 160*.
Springfield, Ill. 151°, 152°.
Springfield, Mass. 141, 143°.
Springfield, Mo. 153, 155°.
Springfield, Ohio 151°.
Staffa 84*, 167°.
Staked plain 32°, 48*.
Standard time 122°.
Stanford University 156*, 157°.
Stanovoi mts. 63°, 68°.
Steamships 83, 119*, 138°.
Steel; see iron.
Steppes 63°, 68*, 86, 89, 114, 119, 136°.
Stockholm 81, 165°, 172°.
Strait of Dover 167°.
Strait of Gibraltar 75°, 78°.
Strait of Magellan 55°, 56°.
Straits Settlements 177°.
Sucre 173°, 174°.
SUDAN 92, 93, 99*, 100*, 104, 174, 181°.
Suez canal 87, 90*, 121, 140, 171, 174, 181°.
Sugar 51*, 59, 73, 80, 86, 90, 93, 98*, 109, 119, 142, 170-172, 174°.
Sugar beets 80, 86, 170, 171°.
Suliman mts. 63°, 66°.
Sumatra 73, 99*, 102, 171, 178, 183°.
Sun 9, 18, 19°.
Supreme Court 125°.
Susquehanna river 43, 145°.
Sweden 81, 165°, 172°.
Sweet potato 109°.
Swiss plateau 75°, 76°.
Switzerland 106, 119, 169°, 171°.
Sydney 182*, 183°.
Syracuse 49, 144, 145°.

T

Table mountain 94°.
Tabriz 175°, 179°.
Tacoma 158, 159°.
Tahlequah 149°, 150°.
Tallahassee 147°, 148°.
Tapioca 59°.
Tapir 113*, 117*.
Tashkend 175°, 179°.
Tasmania 97°, 175, 183°.
Tea 9*, 70, 73, 109, 114, 176, 178°.
Teak 72, 178°.
Tcheran 175°, 179°.
Tehuantepec 161°.
Telegraph 122°.
Telephone 122°.
TEMPERATURE 127°.
Tennessee 147°, 148°.
Tennessee river 43, 126°.
Terni falls 76*, 79°.
Territories 126°.
Texas 119, 130, 134-136, 148, 149°.
Texas prairies 32°, 49, 148*.
Thames river 83, 167°.
Thermometers 128°.
Thianshan mts. 63°, 66°.
Thirteen colonies 123°.
Thousand Isles 145°.
Thunderstorms 129°.
Tiber 79, 169°.
TIBET 65, 66, 175°.
Tibetan 64*.
Tidal marsh 14*, 16°.
TIDES 13*.
Tiflis 175°, 179°.
Tiger 70, 112*, 117°.
Tigris river 60, 175°.
Timbuktu 93, 181°.
TIME BELTS 122°.
Titicaca lake 56*, 57*.
Tobacco 43, 52, 73, 80, 109*, 124, 132°, 133, 144, 146, 148, 162, 172°.
Tokyo 175°, 178°.
Toledo 151°, 152°.
Tonga 98*, 99*; see Friendly islands 183°.
Topeka 154, 155°.
Toronto 161°, 162°.
Torrid zone 20°.
Toucan 113*.
Toulon 169°.
Toulouse 169°, 170°.
Tower of London 83*.
TRADE HIGHWAYS 119°.
Trade winds 21, 22°.
Trading stations 94°.
Trans-Caucasia 175°, 178°.
Transvaal, or South African Rep. 180, 181°.
Tree ferns 60, 68*, 95*.
Trenton 144, 145°.
Tribal government 105°.
Triest 169°, 171°.
Trinidad 161°.
Tripoli 166, 179, 181°.
Tropics 20°.
Tsetse fly 116*, 117°.
Tucson 156, 157°.
Tundras 49, 63°, 68, 86, 111*.
Tunis 179, 181°.
Tunnels 76°.
Turkestan 175°, 172°.
Turkey 80, 106, 169°, 171, 179°.

Turtles 97, 118°.
Turpentine 52, 146*.
Two-Ocean pond 31°.

U

UNITED STATES, Area 123°.
Boundary 123°.
Chinese 124°.
Cities 189°.
Climate 127°-129°.
Commerce 119-121, 130-140°.
Government 124°.
Indians 101, 187°.
Negroes 100, 188°.
Number 125°.
People 104, 123, 124°.
Population 188, 189°.
Products 130°-140°.
Rainfall 129°.
Relief maps 32°, 34°.
States 188°.
Surface 30-52°.
Temperature 128°.
Winds 21°, 22°, 129°.
Ural mts. 68, 86, 165°.
Ural river 165°.
Uruguay 173°, 174°.
Utah 156, 157°.

V

Valdai hills 75°, 86°.
Valencia, Sp. 165°, 171°.
Valencia, Ven. 173°, 174°.
Valparaiso 56, 173°, 174°.
Vancouver island 161°.
Vapor 11, 22°.
Vatican 80, 171°.
Venezuela 173°, 174°.
Venice 79*, 169°, 171°.
Vera Cruz 40, 161°, 162°.
Vermont 142, 143°.
Vesuvius 13*, 79°.
Vicksburg 51, 147°, 148°.
Victoria, Aus. 182, 183°.
Victoria, B. C. 161°, 162°.
Victoria falls 94°.
Victoria Nyanza 89°.
Vienna 81, 169°, 171°.
Vineyards 39*, 78, 79, 86, 170°.
Virginia 123, 145°, 146°.
Virginia, city, 156, 157°.
Vistula river 85, 169°.
Viti-Levu 98, 183°.
Vladivostok 175°, 179°.
Volcanic islands 97°.
VOLCANOES 13*, 56-58, 72, 79*, 82, 98°.
Volga river 85*, 86°.

W

Wales 82, 83, 167°.
Wallace's line 95°.
Walrus 114*, 116°.
Wasatch mts. 31, 32°.
Washington, city, 126°.
Washington, state, 158, 159°.
Watches 76, 144, 171°.
WATER AND PLANTS 107°.
Waterbury 142, 143°.
Water hemisphere 15°.
Waterloo 85*, 169°.
Water parting 10°.
WATER ROUTES 119°.
Waves 13°.
Weather bureau 129°.

Weathering 10°.
Welland canal 46°.
Wellington 182, 183°.
Westerly winds 21°-23°.
Western Australia 182, 183°.
Western Ghats 63°, 72°.
Western plains 31, 32°, 47, 48, 124, 133, 135, 154°.
West Indies 52, 113, 133, 134, 160, 162, 163°.
Westminster 83*, 160*.
West Point 43*, 144, 145°.
West Virginia 139, 145°, 146°.
Whaleback 120*, 152*.
Whalebone 115°.
Wheat 38, 49, 56, 66, 67, 71, 78, 80, 83, 90, 94, 110, 131°, 132, 140, 171, 176, 182°.
Wheeling 145°, 146°.
White mts. 32°, 42*, 42°.
White Nile 89°.
WHITE RACE 102°, 104°.
White sea 165°, 167°.
Wichita 153°, 154°.
Willamette valley 32°, 39, 158°.
Wilmington, Del. 144, 145°.
Wilmington, N. C. 146, 147°.
Wind river mts. 31, 32°.
WINDS 21°, 22°.
Windward islands 161°.
Wine 78, 134, 170, 171°.
Winnipeg 161°, 162°.
Winona 153, 155°.
Wisconsin 151°, 152°.
Wool 44, 82, 94, 135, 136°, 144, 162, 171, 174, 182°.
Woolen cloth 135, 136°.
Wooly elephants 68°.
Woonsocket 142, 143°.
Worcester 141, 143°.
WORLD RIDGE 16°.
Wyoming 158, 159°.

Y

Yablonoi mts. 63°, 64°.
Yak 64*, 65, 114, 115*.
Yale University 142°.
Yam 93°.
Yangtze river 63°, 69°.
Yarkhand 175°, 178°.
Yazoo river 32°, 51°.
Yellow pine 146, 148°.
YELLOW RACE 102°, 103°.
Yellow river 69; see Hoangho 175°.
Yellowstone park 30*, 31, 32°, 114, 158°.
Yenisei river 63°, 68°.
Yokohama 73, 175°, 178°.
Yosemite valley 32°, 33*.
Youngstown 151°, 152°.
Yucatan 159, 161°.
Yucca 38*.
YUKON RIVER 39°.

Z

Zambezi river 80°, 94°.
Zebra 116*, 117°.
Zebu 71*, 117*.
ZONES 20°.
Zuni 101*, 154*.
Zurich 169°, 166, 171*.

3. Relief and Drainage.¹

The surface of Indiana is a plain sloping gently to the south and west from a general elevation of 900 to 1000 feet in the eastern part to 400 to 600 feet in the western part. Lake Michigan has an elevation of 581 feet; the mouth of the Wabash river is 315 feet above sea level. The highest land in the state is a level plateau in Randolph county, 1285 feet. Hills in Brown and Steuben counties reach nearly the same height.

The surface features in a general way are due to the nearly level position of the stratified rocks of the region. These consist of shales, sandstones and limestones, the surfaces of which have been extensively disintegrated by weathering and dissected by streams which in past ages cut out deep valleys, leaving ridges and divides in relief. At a comparatively recent period the North American ice-sheet passed over this surface, smoothing, grinding and carrying material as it advanced. Thus the whole state, except a triangular region of about one sixth of its area in the south central part of the state, was remodeled. Its ridges were smoothed and its valleys filled. When the ice-sheet melted it left a plain of glacial drift, into which the streams have since cut their valleys.

The presence of stony clay, foreign boulders with planed and grooved faces, irregular clay and gravel ridges and numerous marshes and lakes are evidences of the work of the ice-sheet.

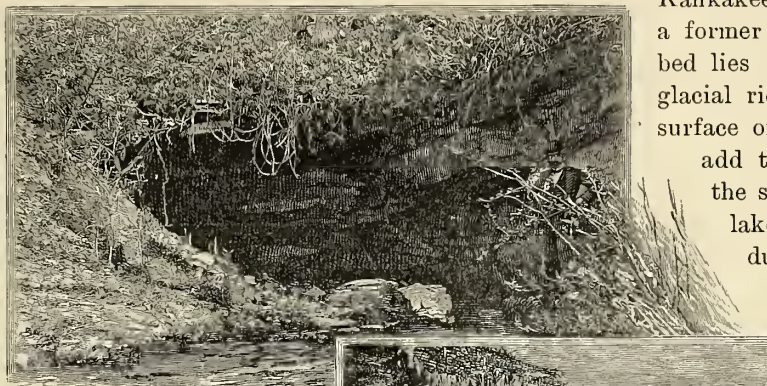


Ohio River near Madison.

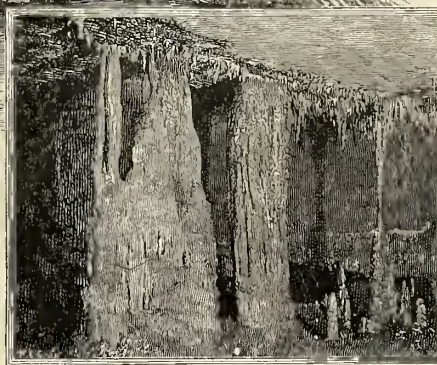
¹ Notes for study: Is the surface of your township generally level or hilly? How far above the general level are the hilltops? How far below are the valley bottoms? Are the hills composed of clay, sand, gravel or bed rock? Do you find bed rock in the beds or banks of streams? Do the streams carry mud or sand? Do they wash down gravel at high water? Where do they get the mud, sand or gravel? Where does this material go? How does the work of a stream change its valley? Visit any of the natural features of your neighborhood, observe and try to explain them. Are there foreign boulders in the fields or streams? What kind of rock are they? Are there plane faces and parallel scratches on them? If so, how do you account for these marks? Is there a lake or pond near where you live? What is its shape? Can you account for its basin? Are there plants growing in it? Do the streams that flow into it carry sediment? If a stream flows out of the pond or lake, is it muddy or clear? Can you tell why? Why is the bottom of a lake or pond usually soft and muddy? What is the effect of plants and sediment on the pond or lake?

In the northern part of the state are hundreds of lakes occupying depressions which are either obstructed stream channels or kettle-shaped holes formed by glacial action. Many lakes have disappeared by being filled with plant growth and sediment, or by drainage.

The larger lakes are very beautiful and are favorite places of resort for health and pleasure. Much of the region along the Kankakee river is the marshy bed of a former lake. Another ancient lake bed lies east of Fort Wayne. Many glacial ridges and hills diversify the surface of this part of the state and add to the picturesque beauty of the scenery. Along the shores of lake Michigan numerous sand dunes have been piled up by the wind.



Mouth of
Upper Twin Cave.²



Limestone Forms in Marengo Cave.²

South of the Wabash river, as it crosses the state toward the west, the country is a smooth, monotonous plain. In the glaciated portion of the state many of the streams have valleys much too large for them, showing that at some time in the past they carried more water than at present. In places the streams have partially cleared out the drift from valleys filled by the ice-sheet and exposed gorges and cliffs of pre-glacial erosion. The picturesque "Shades of Death," on Sugar creek in Montgomery county, and the glen on Turkey Run in Parke county were formed in this way.

In Owen county, Eel river flows into a gorge over its precipitous side at the "Cataract."

The part of the state not changed by the ice-sheet lies south of a line running from the Ohio river northwest through Clark, Scott, Jackson, Bartholomew, Brown and Monroe counties to the west fork of White river, which it follows southwest to its junction with the east fork and continuing through Pike, Gibson and Posey counties to the Wabash river, a few miles north of its mouth. In this region are many deep valleys of erosion, and along the Ohio river and extending north into Brown county are high and rugged hills called "Knobs." These are the remains of the rock surface of the land not yet removed by weathering. "Jug Rock" and "Pikes Rest" are remains of a more advanced stage of weathering. The streams in this region have in many instances made channels through the underlying limestone. Extensive caves have been formed in this way, of which Wyandotte and Marengo are among the largest and most beautiful in America.

The falling in of the roofs of some of these caves has formed sink holes, which abound in great numbers. The streams flowing southward into the Ohio have steep slopes down which they flow in picturesque rapids and cascades, as at Clifty falls.

Nearly the whole of the state lies in the Mississippi drainage basin. A small area in the northeastern part of the state is drained into lake Erie by the Maumee and its tributaries, the St. Marys and St. Joseph rivers. The St.

² Upper Twin Cave is in Lawrence county; Marengo Cave is in Crawford county.

Joseph river of Michigan receives the Elkhart and several smaller tributaries, and thus drains a small part of the state into lake Michigan. The Kankakee river rises near South Bend and flows southwest into the Illinois. The Wabash, the main drainage line of the state, rises near the south line of Mercer county, Ohio, flows northwest to Huntington, thence southwest to Attica, thence south to Terre Haute, thence southwest to the Ohio river. It has a length of about 500 miles and an average fall of 15 inches per mile.

Above Huntington it is a new stream without valley or flood plains. It formerly received the waters of the St. Joseph and St. Marys rivers and the glacial Maumee lake, through a wide valley extending from Fort Wayne to Huntington and continuing along the whole course of the river.

Below the mouth of the Tippecanoe are extensive terraces which continue to the mouth of the river. These are deposits of sand and gravel laid down by the river when it was a stream of greater volume, and into which it cut smaller trenches as it diminished in size. The Tippecanoe and Eel on the north, the Salamonie and Mississinewa and White rivers on the south and east, are the principal tributaries. Most of these streams have courses determined by moraines left by the ice-sheet.

The Whitewater river, in the southeastern part of the state, is a swift stream flowing into the Ohio river. Smaller rivers and creeks drain the southern part of the state.

The Ohio river flows along the southern boundary and furnishes an excellent means of communication by boat between cities along its course and other navigable streams of the Mississippi basin.

4. Soil and Climate.¹

The glacial drift containing a variety of minerals finely ground and intimately mixed is well fitted for

¹ *Notes for study:* Examine the soils of your vicinity and determine the relative amount of clay and sand. Separate the sand and clay by shaking up a portion of the soil in a bottle of water and then letting it settle. Do the clay beds contain numerous pebbles or scratched boulders? Is the bed rock anywhere visible in your vicinity? If so, is it sandstone, limestone or shale? If it is not visible, is it ever reached in digging wells? At what depth below the surface? Are the pebbles and boulders of the same kind as the bed rock, or are they quite different? Is your soil native (formed by the decay of the bed rock) or foreign (brought from a distance by ice or water)? Is it glacial drift? If so, how deep is it? Is it alluvial soil deposited by the overflow of a stream? If so, how does it differ from the soil on the upland? Where did it come from? What kind of soil is formed by the decay of shale? of sandstone? of limestone?

Keep a daily record of the temperature at 7.00 A.M., 12.00 M. and 7.00 P.M. for at least a month. Find the average for the month. Find the range for the month. Keep a daily record of the state of the weather—kind of clouds, rainfall and direction of the wind. Compare with the daily weather maps displayed at your post-office. Observe the changes of the wind and what kind of weather follows the different changes. See if you can observe the passage of an eddying-storm (see page 23).

plant growth and forms a fertile and enduring soil. The flood plains or bottom lands in all parts of the state are very productive.

The soils of the unglaciated area have been produced by the weathering of the bed rocks. They yield good returns of some crops, especially fruits and pasture grasses.

As in the other Central states, the seasons show considerable variation of temperature—the winters being very cold and the summers hot. Changes are frequent and sudden.

The mean annual temperature of the northern part of the state is 49.7 degrees, of the central part 51.6 degrees and of the southern part 54.2 degrees. The average yearly rainfall is in the northern section 35.78 inches, in the central part 38.60 inches and in the southern part 43.49 inches.



Clifty Falls, near Madison.

The prevailing winds are from the west, but frequent variations occur owing to the passage of storm eddies.

5. Minerals.²

The region west of a line drawn from Attica to Cannelton, about 7000 square miles, produces large quantities of block and bituminous coal. Numerous mines are in operation and the yearly output is 4,250,000 tons.

Natural gas is obtained in a field 2500 square miles in extent in the east-central part of the state. It is piped to the larger cities adjacent to the region and to Chicago, and great manufacturing activity has developed in that part of the state as a result of

the discovery of this cheap and convenient fuel. In a small field in the northern part of the gas belt, petroleum is produced in paying quantities. Smaller fields have been found in other parts of the state.

Several varieties of excellent building stone are quarried in various sections. The Bedford oölitic limestone occurs in a narrow belt extending from Putnam county to Crawford county and is one of the best building stones in the world. It is extensively used throughout the eastern part of the United States. Other valuable limestones are distributed along the upper Wabash and in a belt extending through the eastern half of the state to the Ohio. Throughout the coal fields massive beds of sandstone furnish valuable material for bridges and buildings. Clays

² *Notes for study:* Are there any quarries in your neighborhood? If so, of what kind of stone? What is it used for? Are there any buildings wholly or partly of stone in your town? Are there stone sidewalks? If so, what kind of stone is used? Where did it come from? What material is commonly used for the foundations of houses? Is there a brick or tile factory in your vicinity? If so, visit it and observe the materials and processes used. Visit a quarry and observe the machinery, processes and product.

and shales of great value for the manufacture of pottery, brick and drain tiles are widely distributed.

6. Plants and Animals.¹

The native vegetation of the state consists of fifteen hundred species of plants, chiefly grasses and herbs. More than four fifths of the state were originally covered with a heavy growth of hardwood timber. Fine specimens of trees stood in great number and variety over all the state, except the prairies which are confined chiefly to the north-west part. Several varieties of oak and hickory, walnut, poplar, ash, elm, cherry, beech and hard maple occur with many others, comprising in all more than a hundred varieties.

Many kinds of animals, such as buffaloes, deer, wolves, panthers, foxes, beavers, raccoons, with a great variety of birds, fishes and reptiles, were formerly found in the state. But all of the larger animals have entirely disappeared, and the others have greatly diminished in numbers, with the settlement of the country.

7. Industries and Commerce.²

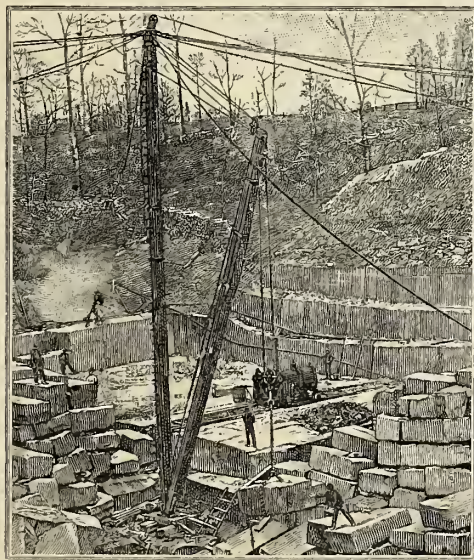
Agriculture is the occupation of more than half the people of the state. The rich soils of the drift plains and river valleys yield large crops of cereals and forage. Vegetables and fruits in great abundance are produced, especially in the southern part.

The raising of live stock is a leading agricultural industry and receives much attention.

The yield of the more important crops in bushels for 1898 was: — corn, 145,501,404; wheat, 51,001,080; oats, 33,490,424; rye, 948,056; potatoes, 4,379,044; and hay, 3,498,200 tons.

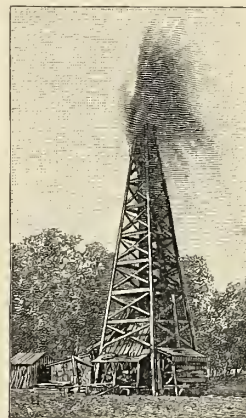
In the same year there were of live stock 1,077,594 cattle, 3,316,870 swine, 700,000 horses and mules and 1,255,740 sheep.

The smoothness of the surface renders cultivation easy and permits the general use of improved



Sandstone Quarry, Worthy.

machinery on a large scale. Farm buildings and improvements are generally good and often luxurious. Much under-drainage by drain tile has been done, and many miles of open ditches have reclaimed the marsh lands. Good turnpike roads are common, and a progressive spirit has developed great interest in advanced agriculture. Convenient markets and good shipping facilities have helped greatly in bringing about successful agricultural conditions.



Shooting a Gas Well.

Mining and quarrying give employment to a large number of people. The value of the annual output of coal, petroleum, stone and gas is many millions of dollars.

On account of the abundance of raw materials, cheap and convenient fuels, and market and shipping facilities, manufacturing receives great attention. In the order of their value hog and cattle products, wagons and buggies, oils, iron and steel goods, glass, furniture, tin plate, agricultural implements and machinery are manufactured. In 1898 the value was one hundred and forty million dollars.

The marketing and transportation of the products of the state make commerce and trade of great importance. Excellent shipping facilities are furnished by nineteen east and west and seven north and south trunk lines of railway, with many tributary lines. These lines with lake and river routes furnish convenient communication between all parts of the state and the whole country.

8. Cities.³

Indianapolis (150,000) was located in 1820, for the express purpose of making it the capital city. The site possessed almost no other natural advantage than that of geographical position near the center of the state; yet this position proved sufficient to build up by far the largest city in the state. Its influence in business, politics and social affairs is very great. Its growth is due largely to the railroads which enter it from many directions, bringing the products of the surrounding country and redistributing them over a wide area.

ing community? Make a list of the farm products of your county. What is the average yield per acre of the different grains, hay, etc.? What is the market value of the different products? What physical conditions determine the kind of products produced in your vicinity? Are there factories in your vicinity? Of what kind are they? Where do they get their raw material and fuel? What becomes of their finished products? Is there available water power in your vicinity? What use is made of it?

What railways run through your town or county? Are they trunk or branch lines? What part of Indiana is crossed by most railways? Why?

³ The population of most of the Indiana cities has largely increased since the latest national census. A conservative estimate of the present (1899) population has been made from the best information available. Populations of cities according to latest national census are given on the page next preceding the pronouncing vocabulary.

¹ Notes for study: Make collections of specimens of woods of your vicinity; of the plants growing on a small area. Make a list of the varieties of trees in a grove, or wood lot, near your home. What varieties of birds and animals are found in your vicinity? Where do they live and what do they eat? What causes have led to changes in the plant and animal life of your locality? Are the forests and birds carelessly destroyed in your vicinity? What are the laws relating to the protection of birds? Is Arbor Day observed in your school?

² Notes for study: Make a list of the industries and occupations of your city or neighborhood. Is yours an agricultural, mining, or manufactur-

Indianapolis is the seat of the state government and the residence of its officers. A Statehouse has been built at a cost of \$2,000,000, and a Soldiers' and Sailors' Monument at a cost of nearly \$500,000. Among the public institutions are a Hospital for the Insane, an Institution for the Blind and for Deaf Mutes, a Woman's Reformatory and a United States Arsenal. In manufactures it is the leading city of the state, its principal products being packed meats, agricultural machinery, vehicles and furniture.

Evansville. Some of the oldest cities in the state are along the Ohio river; of these Evansville (70,000) is the largest. The adjacent coal field makes it an important industrial and commercial center. A large business is done in lumber, iron, furniture, grain and tobacco. It is a port of entry and has a Custom House.

Jeffersonville (14,000) and **New Albany** (20,000) are opposite Louisville, Kentucky, and by the "Falls of the Ohio," a rapid which is passed by a canal. Jeffersonville is the head of navigation at low water and has extensive shipbuilding and car works. The State Reformatory for men is located there. New Albany manufactures iron, furniture, woolen and cotton goods, clothing and leather.

Madison (10,000) is situated where the bluffs of the Ohio are highest and in the midst of some of the most beautiful scenery in the state. It contains establishments for the manufacture of iron, furniture, wagons, woolen and cotton goods and for shipbuilding.

Fort Wayne (50,000) contests with **Vincennes** the honor of being the first trading post established by white men within the boundaries of Indiana. The question can probably never be settled. La Salle in 1680 found on the present site of Fort Wayne the Indian village of Kekionga. It was at the junction of the St. Marys and St. Joseph rivers, where they make an abrupt turn to the northeast, forming the Maumee. This was at the head of canoe navigation from lake Erie and the beginning of a short portage over which canoes were carried to the head waters of the Wabash. Thus from the earliest times the place has been a natural center of population and trade. General Wayne built his fort there in 1795. The Wabash and Erie canal and three railroads have availed themselves of the old outlet of a glacial lake in passing from the St. Lawrence basin to that of the Mississippi. Car wheels, engines, wagons, electrical apparatus and hosiery are there manufactured on a large scale. This city is the seat of

the Lutheran Concordia College and of the State School for Feeble-Minded Youth.

Terre Haute (40,000), near the site of one of General Harrison's forts, is located on a high terrace of the Wabash river. It is an important railway center and also has a large river trade in grain. Cheap fuel and the rich river bottoms and terraces have led to the manufacture of iron, hominy, flour, buggies, distilled liquors and vitrified brick and tile. The State Normal School and Rose Polytechnic Institute are located in the city; and St. Mary's Institute, a Roman Catholic school for young women, is beautifully situated on the west side of the river, four miles from the city.

Near the northern border of the state is a group of cities which enjoy the advantages of the numerous lines of railroads running east from Chicago. The largest of these is **South Bend** (35,000), situated at an abrupt bend of the St. Joseph river, which furnishes good water power.

It is the fifth city in the state in value of manufactured articles. The largest wagon works and the largest plow works in the world are established here. The city produces also furniture, paper, sewing machines and wood novelties.

Mishawaka, a small town four miles above South Bend, carries on similar lines of business on a large scale.

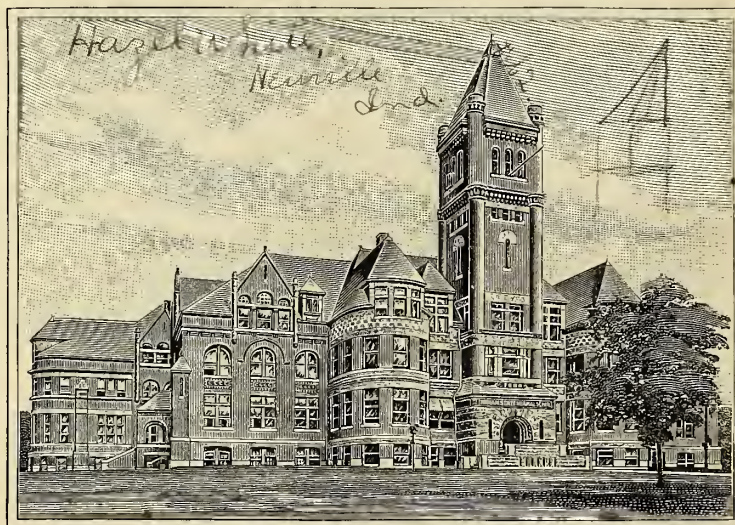
Elkhart (12,000) utilizes the water power of both the Elkhart and St. Joseph rivers

in the manufacture of musical instruments, starch, paper and wagons. It has also the machine shops of the Lake Shore and Michigan Southern railroad, which here employs 1500 men. **Goshen** (10,000), ten miles above Elkhart, is engaged in miscellaneous manufactures. The two cities are connected by an electric railway, which is being extended to South Bend, sixteen miles farther.

La Porte (9500) manufactures farm machinery, vehicles (including horseless carriages), woolen goods and bicycles. Pine Lake Assembly is a popular summer resort near the city. **Valparaiso** (8000) is the seat of a Normal School which has an attendance of 3000 students, being the largest school of its kind in the United States.

Michigan City (14,000) is the only important lake port of Indiana, and has a good harbor and docks. It has a large trade, chiefly in lumber. This city is the seat of one of the State Prisons.

Hammond and **Whiting** are virtually suburbs of Chicago. The former has the largest meat packing establishment in the state, and the latter the largest oil refinery.



Indiana State Normal School, Terre Haute.

all the cities in Indiana

Lafayette (20,000) enjoys a beautiful site upon the bluffs and terraces of the Wabash. It manufactures wagons, wire goods, bridges, hosiery, bicycles and hard-wood lumber. It is the seat of Purdue University.

Logansport (16,000) has water power derived from Eel river. Here are the machine shops of the Pennsylvania railroad, and near by is the limestone quarry of the Illinois Steel Company.

Peru, Wabash and Huntington owe their prosperity largely to quarries of limestone, much of which is burned for quick lime. Peru has also a small but rich oil field.

Warsaw is surrounded by lakes, at one of which the Winona Assembly and Summer School is established.

In the southern part of the state are several county seats which, owing to special advantages, have outstripped their neighbors. Of these **Vincennes** (10,000) is the oldest town in the state, and historically the most interesting. It was for a hundred years the chief center of the region between the Mississippi and the Alleghenies. It is surrounded by coal fields and a rich agricultural region. The first school in the state, Vincennes University, is still flourishing near the close of its first century.

Washington (9000) is an active coal mining center and is in the midst of one of the best wheat-producing regions. The bottoms along White river are here very wide, and some 14,000 acres of marsh land have been reclaimed by drainage. The machine shops of the Baltimore and Ohio railroad are situated here.

Columbus, Shelbyville, Seymour, Greensburg and Connersville have a population varying between 6000 and 10,000 each. They are railroad centers and are engaged in various manufactures, chiefly of carriages and furniture.

Richmond (20,000) is situated upon the Whitewater river, which has here cut a gorge 100 feet deep. This city is engaged in the manufacture of iron, machinery, furniture and coffins. It is the seat of Earlham College.

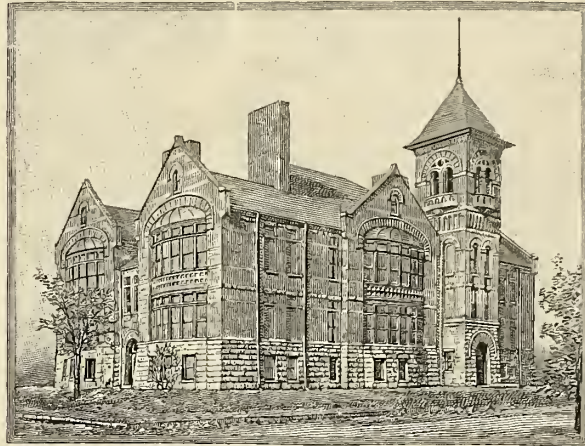
Greencastle (5000) is the seat of De

Pauw University. **Brazil** (8000) is the center of the block coal mining region and has large brick and tile factories. **Crawfordsville** (7500) is the seat of Wabash College. It has factories of vehicles, fence wire and pressed brick. It is an important market for grain, wool and timber.

Bedford and Bloomington are centers of the oolitic stone quarries. The latter is the seat of Indiana University.

There remains to be noticed a group of the most interesting cities and towns in the state — those of the gas belt. The discovery and use of natural gas has caused them to increase in population from two to fourfold in ten years, and has changed their character from commercial to manufacturing towns. This has been accompanied by rapid increase in wealth and notable changes in social and political conditions. Of these **Muncie** (27,738) is

probably the metropolis. Its chief manufactures are glass, iron and steel goods, carriages, paper and shoes. **Anderson** (25,000) manufactures glass, iron and steel, tin plate



Model Schoolhouse, Terre Haute.

and paper. It is connected with **Alexandria** and **Marion** by an electric railway. Marion (22,000) has many manufacturing establishments, chiefly for iron, glass, paper, furniture and zinc. **Kokomo** (12,000) produces glass, paper and pottery. **Elwood** (10,000) is the seat of the first and largest tin plate factory in America. It has also large glass factories. **Hartford City** (6000) has glass factories and paper mills. **Alexandria** (6500) has large glass and steel works. **Noblesville** (6000) makes glass, paper and carbon.

9. Government.¹

The government is organized under executive, legislative and judicial departments.

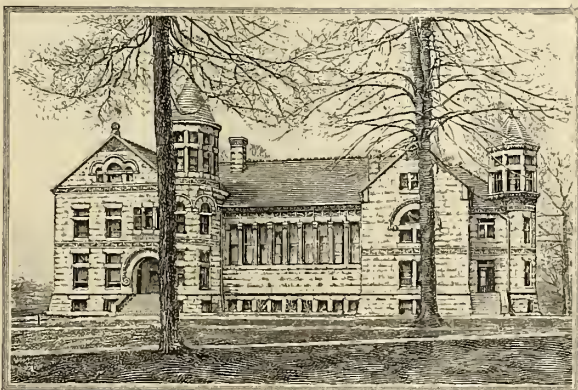
The executive power is in the hands of the governor, who is elected for four years. He is commander of the militia and has the power of pardon and of veto on legislation, although a bill may be passed over a veto by the same number of votes necessary to enact it at first.

Administrative officers are the Secretary of State, Auditor, Treasurer, Attorney-General and Superintendent of Public Instruction.

The law-making power is exercised by the General Assembly, consisting of not more than fifty senators, one half of whom are elected every two years for a term of four years; and one hundred representatives elected biennially.

Each house elects its own officers, except that the

¹ Notes for study: Visit a court of justice and observe the proceedings. Visit and observe procedure in various county offices. What are the duties of the various officers? What are the duties of the township trustee? Study in this connection the Constitution of Indiana.



Library Building,
Indiana University, Bloomington.

Lieutenant-Governor is president of the Senate. Each house is judge of the election of its own members, and laws to be passed must receive a majority of the votes of both houses. Bills for the raising of revenue must originate in the House of Representatives.

The judicial power is vested in the Supreme, Circuit and Superior Courts. The Supreme Court passes on the constitutionality of laws enacted by the General Assembly and decides questions on appeal from the lower courts. The Circuit Court tries causes between individuals or corporations and offences against the laws. Superior Courts are created in circuits where the legal business is too great for one court.

The state is divided into ninety-two counties, each having a county seat and officers for local administration of the government. These officers are three Commissioners, an Auditor, Clerk, Treasurer, Sheriff, Recorder, Surveyor, Coroner, Assessor and County Superintendent of Schools.

Each county is divided into civil townships, each having a Trustee, Justice of the Peace, Constable, Assessor and Supervisor of Roads. Incorporated towns have a Mayor, Council, Clerk, Treasurer and Board of Police. All expenses of government are provided for by taxation.

10. Education.¹

Indiana maintains an excellent system of free schools. Between the ages of six and fourteen years attendance is compulsory. The permanent school fund is one of the largest held by any state in the Union. The interest only is used, and the income received is supplemented by taxation. Common schools are provided in every neighborhood. Provision is made for a high school in each township, if the people so desire. More than one hundred and forty commissioned high schools are in existence.

The state also maintains a Normal School at Terre Haute, for the training of teachers for the public schools; a State University at Bloomington, for scientific and classical learning; and in connection with the general government and the liberality of one of Indiana's citizens, Purdue University was established at Lafayette, for the teaching of the natural sciences, engineering and agriculture.

There is also at Fort Wayne a school for Feeble-Minded Youth; Soldiers' and Sailors' Orphans' Schools at Knightstown; and Institutions for the Blind and for Deaf Mutes at Indianapolis.

In addition to the state system of public schools, numerous private and religious schools and colleges furnish excellent educational opportunities. Among these are Wabash College at Crawfordsville, De Pauw University at

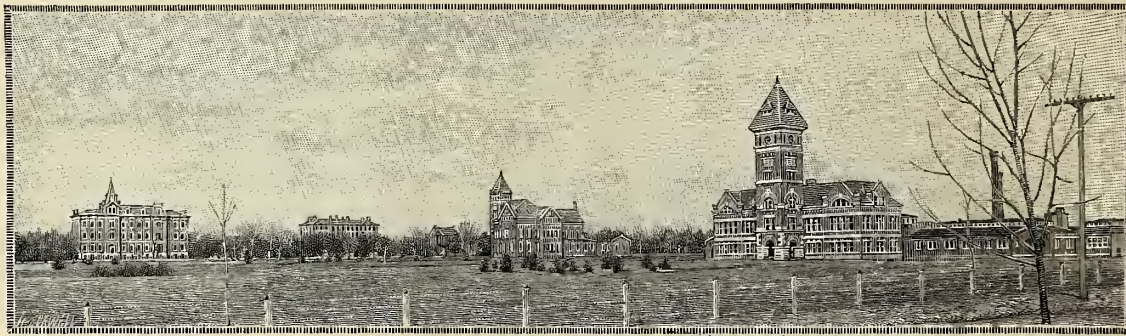
Greencastle, Butler College at Irvington, Franklin College at Franklin, Hanover College at Hanover, Earlham College at Richmond and

Notre Dame University near South Bend. Large private Normal Schools are located at Valparaiso, Danville and Angola.

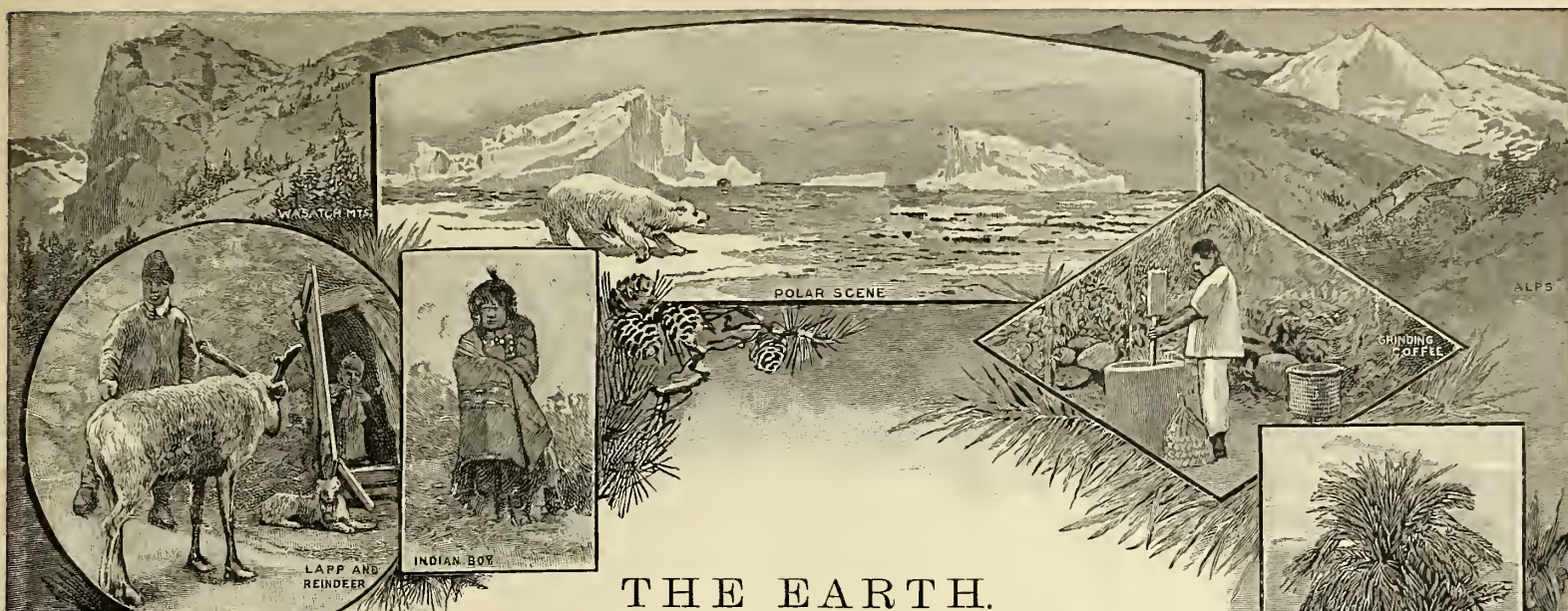
Courses of instruction and manual training are maintained in the reformatories of the state.

¹ Notes for study: The schools, courses of study, plans and purposes of instruction, sources of revenue, preparation of professors and teachers may be studied in connection with this topic. Procure catalogues of leading educational institutions of your state and note their courses of study and special advantages. See school law and Reports of Superintendent of Public Instruction, for sources of school fund, etc.

What is the cost of conducting your school for one year? From what sources is the money obtained? How much from each? How many schools are there in your town or township? How many teachers? How many persons of school age? How many are enrolled in all the schools? What is the average attendance? What are the school officers of your city or county? How are they chosen? What are the required qualifications of the teachers?



Purdue University, Lafayette.



THE EARTH.

1.

Form and Size of the Earth.¹

Geography is the study of the earth as our home.

Of course we all wish to know a great deal about this home, — what kinds of houses or huts the people live in, how they dress, what they buy from us or sell to us, what strange plants and animals they see.

Every day as we study this book, we shall learn new facts about the earth, — its forms of land and water, its plants, its animals or its people. Some of these are shown in the pictures on this page.

The earth is a great ball of land and water, surrounded by air. We see so small a part of the earth at a time that it does not look like a ball.

There are many proofs that the earth is round. Here are a few of them:

1. Many persons have gone around the earth.
2. As ships sail out to sea, their hulls are lost to sight while

their sails are clearly seen.

3. When travelers go day after day towards the north or the south, new stars rise over the horizon before them, while the stars behind sink beneath the horizon.

4. Sometimes the earth moves between the sun and the moon and casts a shadow on the moon. The edge of this shadow always looks like part of a circle.

¹ To Teachers : Read the *Preface* ; note what is there said about large and small *Type*, and use of *Topics*. See Teachers' Manual for *Topics*.

The sun and the moon are round, like the earth. The moon is smaller than the earth, but the sun is many times larger.

The shadow of the earth on the moon is called an *eclipse of the moon*. There may also be an eclipse of the sun, when the moon is between the earth and the sun.

The great body of salt water which surrounds the land is called the *sea*. Various parts of the sea are known as *oceans*. The oceans lie in broad hollows on the earth.

The globe map below shows the land and the water on one side of the earth. These great land areas are called *America*.

The *diameter* of the earth, or the distance from side to side through the center, is nearly 8000 miles. The *circumference*, or greatest distance around the earth, is about 25,000 miles.

If a train of cars were to travel day and night at the rate of thirty miles an hour, how long would it take to go 25,000 miles ?

The sun is about 93,000,000 miles away and is more than a million times as large as the earth.

TOPICS : —
Form of earth ; proofs ; eclipse ; sea and oceans ; diameter ; circumference.²

² Topics are placed after a few lessons to guide the study of pupils



One Side of the Earth.

2. The Land and its Soil.

The greater part of the earth is a mass of rock. On the land most of the rock is covered with *soil*. Fine mud covers the rock under the sea.

As the weather changes from warm to cold, or from wet to dry, all rocks exposed to the air and the rain slowly decay, but many years may be needed to loosen only a few grains. As rocks decay or crumble they are said to *weather*.

The loosened parts weather finer and finer, forming *rock waste*. In some places the rock waste is thirty or forty feet in depth, but in most places it is thinner.

Soil is finely crumbled rock mixed with plant and animal matter. Year after year, plants grow and decay, while myriads of insects and worms live and die in the fine rock waste. The remains of the plants, the insects, the worms and other creatures mingle with the fine rock waste to form the dark rich topsoil. The roots of most plants grow in, to turn mill wheels.

In lands that have but little rain and frost, rocks weather very slowly. In our own country, where rains are common and where winters bring frost and thaws, the decay of rocks is more rapid.

On steep hillsides, much of the rainfall is quickly shed into rills, brooks or larger streams, washing away some of the surface soil. The streams are thus filled with rapid currents of muddy water and often overflow their banks.

On flat land, a large part of the rain sinks into the ground, instead of running away. If the soil is loose and sandy, almost all the rainfall sinks into it. Level lands have deeper soil than steep slopes.

TOPICS: — What the earth is made of; rock waste; soil; where deepest soil is found.

3. Springs and Streams.

Water that soaks into the ground is called *ground water*.

It creeps slowly through the soil and loose rock, towards the lower land. It is the ground water which makes the soil of meadows wetter than that of hillsides.

Water coming out of the ground through a crevice forms a *spring*.

Many springs are found at the foot of hills. Others appear along borders of brooks or rivers. In many places the ground water is found rising in the

beds of streams or lakes. Surface water is often muddy, but nearly all ground water is clear, because it moves too slowly to carry waste. Spring water is therefore much better than surface water for drinking.

Most springs flow so slowly that the supply of ground water from one rain lasts till rain again falls. Such springs flow in both rainy and fair weather. In long dry spells, or *drouths*, springs yield less and less water, or they may even cease to flow. The streams then become very low, or perhaps dry up. TOPICS: — Ground water; springs; best drinking water; drouths.

4. Rivers and River Basins.

Some rivers start from springs. Others flow from lakes, swamps or melting ice and snow. The beginning of a river is called its *head* or *source*.

Large cities are often built near rivers. If the water flows swiftly, it may be used and other vessels may go from place to place, carrying passengers and freight.

The lower end of a river, where it flows into the ocean or into some other body of water, is

known as the *mouth* of the river. See picture on p. 11.

Many of the largest cities in the world are built near the mouths of rivers. These cities carry on trade with one another, and collect and distribute merchandise for the inland people.

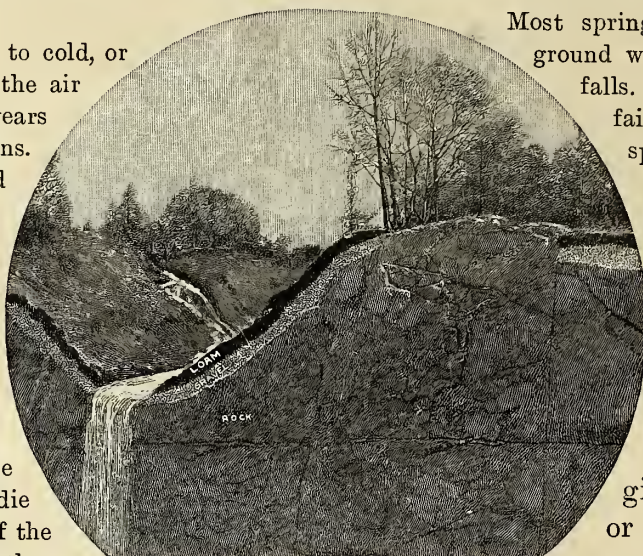
A river and all its branches form a *river system*.

All the land which sheds water into a single river system forms a *river basin*. The basin generally takes the same name as the main river in the system.

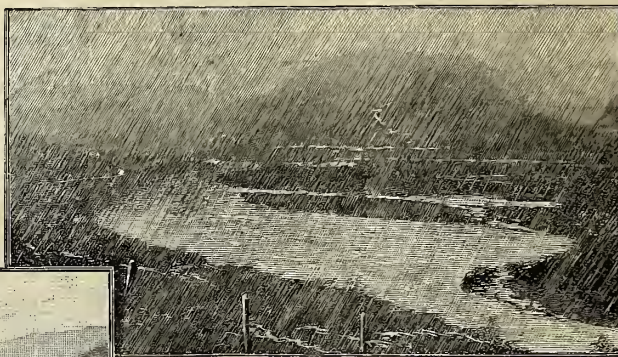
Find the line which bounds the basin of the river marked *C* in the picture at the bottom of this page. The line runs along the top, or *crest*, of the ridges, and separates the slopes in basin *C* from those in the other basins which adjoin it. Such a line is called a *divide* or a *water parting*. It divides the slopes of the basins.

Some of the most important divides on the earth cross wide plains whose slopes are too gentle for the eye to detect, but the water is turned even on such slopes.

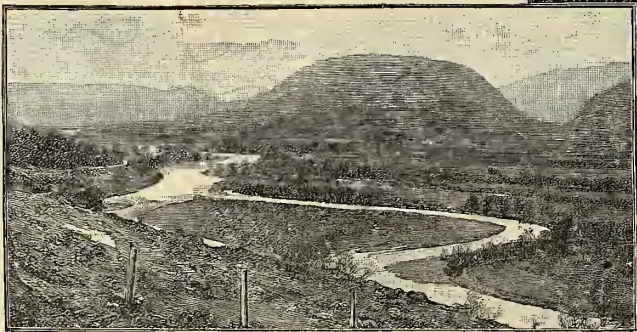
TOPICS: — Head or source; uses of rivers; mouth; river system; river basin; divide.



Section of a Hill.



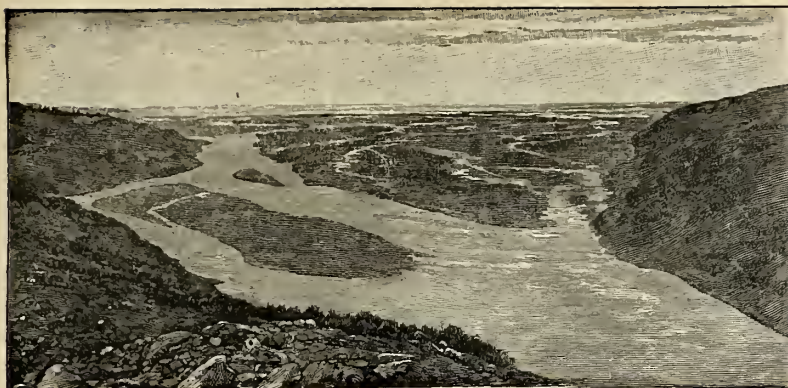
A Stream in Rainy Weather.



A Stream in Dry Weather.



River Systems and River Basins.



Delta in Alaska (Yaktse River).



Plateau with Valleys, in Colorado.

5. Plains.

Vapor rises from the oceans, and the winds move it about. The vapor often forms clouds from which rain falls.

After heavy rains, or after much snow has quickly melted,



rivers often overflow their banks and spread over flat meadows. Flooded rivers are very muddy, for they not only cut their own banks, but their swollen branches also bring them muddy water.

As the water spreads over the meadows, it moves more slowly than in the narrower channel, and some of the mud settles on the meadows. When the flood is over, this mud, or *silt*,¹ gives fresh food to plants.

Meadow lands that receive soil from muddy streams are called *flood plains*. In broad valleys the flood plains may be several miles wide.

In dry countries, flood plains are the best places for people to settle, as the water can easily be led in canals and ditches across such plains.

Most of the fine mud borne by rivers is washed down to the sea. A large part of the mud settles near the river mouths, where the water flows more slowly. The settlings, called *sediment*,

often forms low and flat plains in which the river may divide into branches, as shown by one of the pictures at the top of this page.

Plains built of sediment at the mouths of streams are called *deltas*. Most deltas are the lower ends of flood plains built out into the sea. The soil of delta plains is generally fine and fertile.

Many parts of the land were formerly under the shallow water of the ocean border. Long ago they were slowly raised from beneath the sea and became dry land.

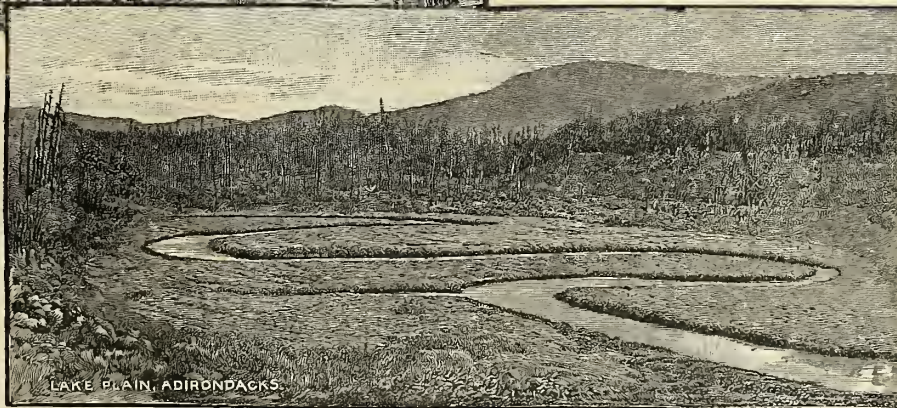
The sea-bottom near most shores is slowly made smooth by layers of silt washed from the land. When evenly uplifted, the smooth bottoms form plains having very gentle slopes.

A plain that was once part of the sea-bottom and that is now near a coast is called a *coastal plain*.

The picture on the left shows part of a coastal plain in our own country. It covers many thousand square miles and is very fertile. If the land shown in the smallest picture on page 14 were to rise, the sea-bottom there might form a coastal plain like the one in the picture beside it.

Lake plains are formed under lakes; the smooth muddy bottoms are laid bare when the water flows off or is drained away.

One of the pictures on this page shows a *lake plain*, with a small stream winding across it. Some lake plains cover thousands of square miles. Their fine soil is often very fertile.



City on Narrow Flood Plain (Prussia).

Plains that stand high above sea level are called *plateaus*. Most of the rocky layers in plateaus were made very long ago beneath the sea.¹

Some of the layers are level and extend for many miles; others are more or less tilted.

TOPICS:— When rivers are muddy; what silt settles; flood plains; deltas; coastal plains; lake plains; plateaus.

¹The various types of plains are more fully treated later in the work. See titles *Flood plain*, *Delta*, *Coastal plain*, etc., in the *Index*.

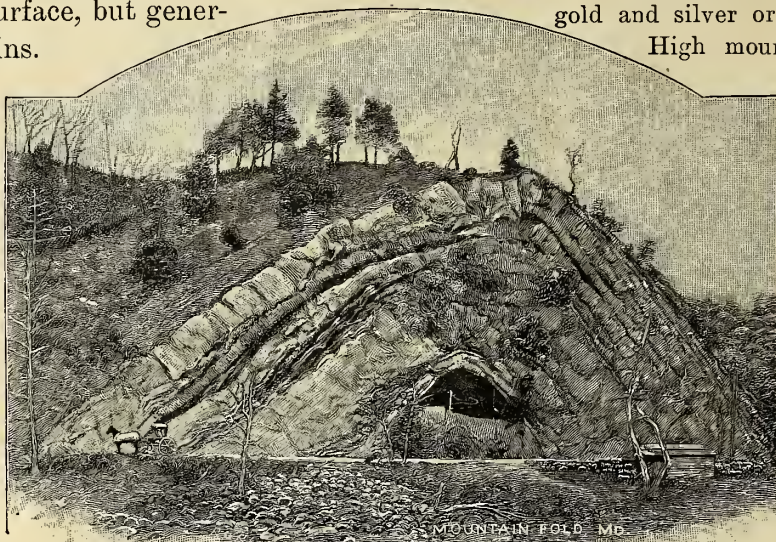
6. Mountains.

Mountains are rugged parts of the earth's surface that rise high above the surrounding country. *Hills* are also rugged parts of the earth's surface, but generally not so high as mountains.

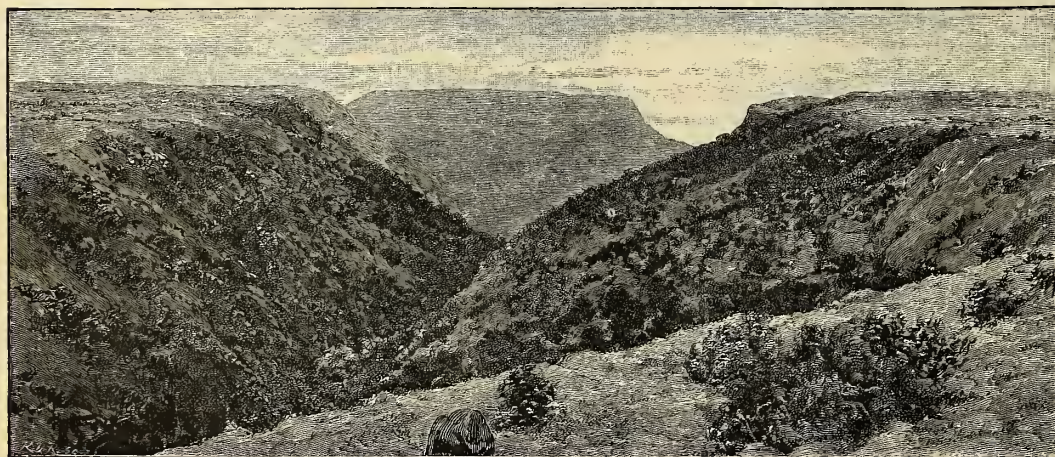
In some places layers of rock have been broken into blocks and tilted to form mountains, as in the lowest picture on this page. There are many mountains of this kind in the northwest part of our country. They are so young that rain and frost have not had time to wear back the cliffs very much.

In the eastern part of our country are many mountain ridges formed of layers of rock that have been bent into folds or arches, as shown in the upper picture on this page. Layers rich in iron ore and coal are often found in such folds, and are a source of great wealth.

Most mountains are formed by the wearing of deep valleys in regions that have been greatly uplifted. The mountains are the steep and rugged parts not yet worn away.



Folded or Arched Rocks (near Hancock, Md.).



Valleys cut in a Plateau of Lava (Dekkan, India).

Some mountain regions are worn away to sharp rocky peaks. The mountains of other regions are rounded like domes. Still others have flat tops and steep sides. See *Index for references to pictures of mountains*.

While the great masses are being lifted to form the highlands, their rocks may break and slip, making the ground tremble. The trembling is an *earthquake*. Another cause of earthquakes is given on the next page.

A high and rugged ridge, or several such ridges near one another, may be called a *mountain range*. Some ranges are hundreds of miles long.

A number of ranges having the same general direction in one great highland form a *mountain system*.

There are many large ranges of mountains in the western part of our country. All these ranges

belong to the *Rocky Mountain system*. This mountain region was very unevenly lifted and is now so greatly worn away that its surface has gone down to beds of rock that were once deeply buried. It is in such deep layers of rock that veins yielding gold and silver ore are found.

High mountains reach into the upper air which is cold, even when the air in low valleys not many miles away is very warm. On the lofty peaks, three miles or more above sea level, the air is so light or thin that many persons find it difficult to breathe there. The lower air, near the level of the sea, is dense because it is pressed down by all the air above or upon it.

Winds are active around high mountains, and clouds form quickly in the cooled air as it rises to cross the ranges. When the air is cooled enough, it gives out snow or rain. Snow often

falls on the mountains, while rain is falling in the lower valleys.

On some mountains, snow lies all the year and becomes very deep in the high valleys. Rain soaks into the snow, making it more compact. The heavy mass slowly changes into ice.

As the layers of ice on a mountain grow thicker they creep down the slopes. When the ice enters the lower valleys, it melts and forms brooks or rivers.

Such a body of ice slowly moving down a slope is called a *glacier*.

Glaciers carry rock waste that rolls upon them from higher ground. They drag along stones, gravel, sand and clay beneath the ice, — scraping the surface over which they creep.

When the ice melts it leaves coarse rock waste near the melting ends, but most of the finer waste is carried away by the glacier streams.

When glaciers push their way into the ocean, huge blocks of ice, called *icebergs*, break off and float away.

TOPICS: — Mountains; hills; how some mountains are made; earthquakes; range; system; upper air; clouds; glaciers; icebergs.



Broken and Tilted Lava Blocks forming Young Mountains (Oregon).

7. Volcanoes

In some parts of the world, melted rock, or *lava*, has been pushed up from beneath the surface through breaks in the surface rocks, and has cooled in great cone-shaped heaps or in broad sheets. In some places this work is still going on.

Steam and gases sometimes burst forth with the lava, shaking the ground and thus causing *earthquakes*. The lava is then blown into fragments, called *ashes*, or even into fine dust that may be carried many miles by the wind. Cones built of lava and *ashes* have steep sides, with hollows or *craters* in the top, where the gases and ashes were blown out. Lava often escapes through cracks in the sides of cones as well as from the craters.

Each of these cone-shaped masses is called a *volcano*. It may be no larger than a hill, or it may be two or three mile in height.

The bursting forth of lava from a volcano or a fissure is called an *eruption*. Many eruptions must take place to build up a great cone.

The molten rock from volcanoes sometimes spreads out in wide plains. In some places, lava has poured from long cracks in the earth's surface and has formed plains that cover many thousand square miles.

One of the pictures on this page shows part of a great lava plain in our country. The lava has weathered slightly and its scanty soil now supports sage brush. The picture next above shows a fresh flow. Its surface has not yet had time to decay.

TOPICS:—Lava; earthquakes; crater; volcano; eruption; lava plains.

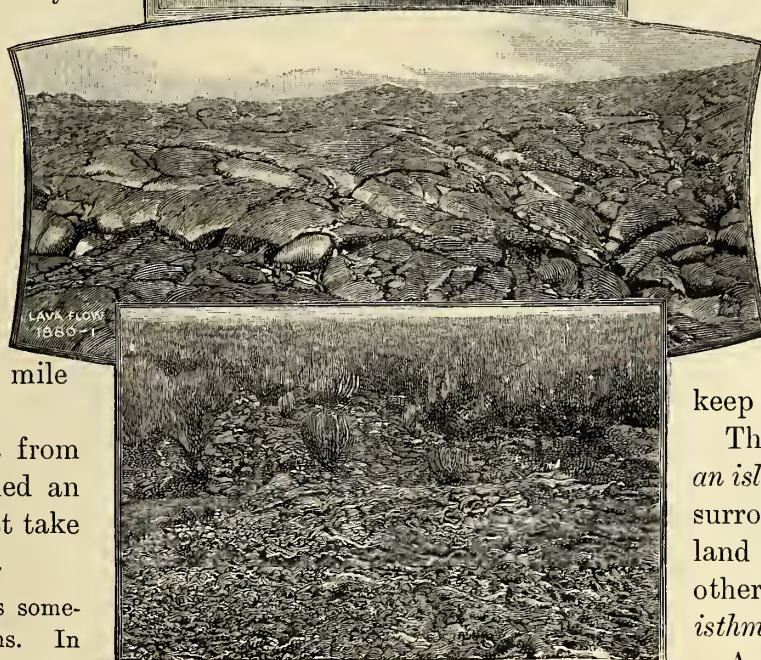
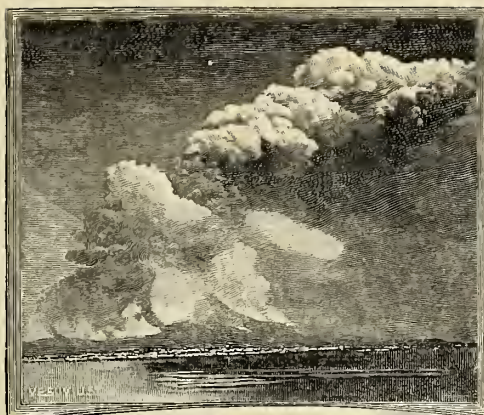
8. Waves, Tides and Shore Forms.

Winds blowing over the sea make waves.

If a hanging rope is struck or shaken, waves glide along it. The rope simply bends to form the waves.

The water in waves only rises and falls, like the waves in the rope, but the *wave-forms* travel forward. The larger they are, the faster they move.

Waves on beaches often wash pebbles and sand up and down, grinding them finer and finer. Great storm-waves are strong enough to move large rocks.



Lava Plain (Idaho).

Twice each day,¹ the ocean slowly rises and falls on its shores. For about six hours, the water creeps up the beaches and against the foot of cliffs. During the next six hours, it slowly settles back.

This rise and fall of the ocean on its shores is called the *tide*.

The tide is not felt at sea and is seldom very strong on headlands, but in narrowing bays the water may rise ten, twenty, thirty feet or more.

There is a tide on the side of the earth towards the moon and another on the opposite side. The tides are caused chiefly by the attraction of the moon, but partly also by the sun.

The flowing in of the tide is called its *flood*; the flowing out is its *ebb*. These currents carry clear water into and out of harbors and thus keep them pure.

The word *peninsula* means *almost an island*. Peninsulas are only partly surrounded by water. A *neck* of land joining a peninsula with another body of land is called an *isthmus*.

A *strait* is a body of water joining two larger bodies of water. A strait may be many miles in width, but it is always narrower than the bodies of water which it connects. The word *strait* means *narrow*.

Some long and shallow straits are called *sounds*. The name *sound* may also be given to any body of water

partly inclosed by islands. Sounds and straits are often only drowned valleys. Some of

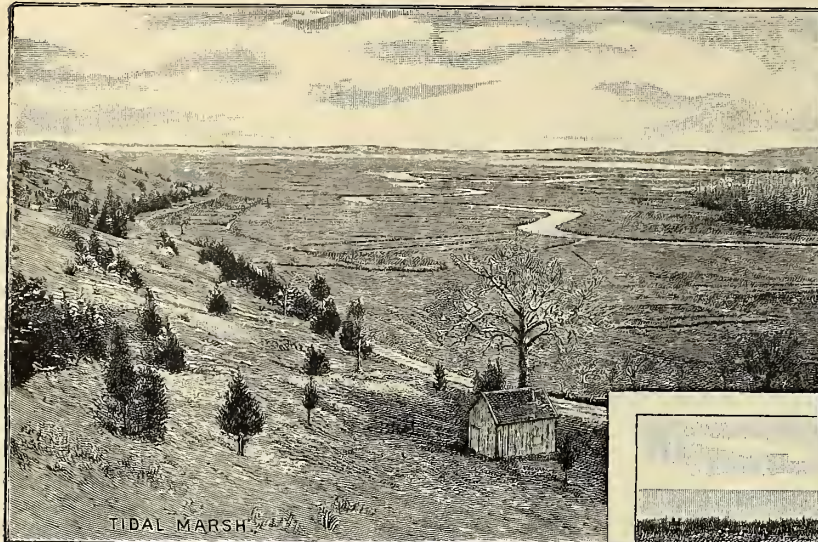
them are very deep.

Large arms of the sea are called *bays*, *gulfs* or *seas*. Some of these are hundreds of miles long and wide.

Straight or regular shores are found where smooth bottoms have been slowly raised from the sea.

¹ More exactly, in 24 hours and 50 minutes. Some places have but one tide a day, and others have more than two tides in that time.





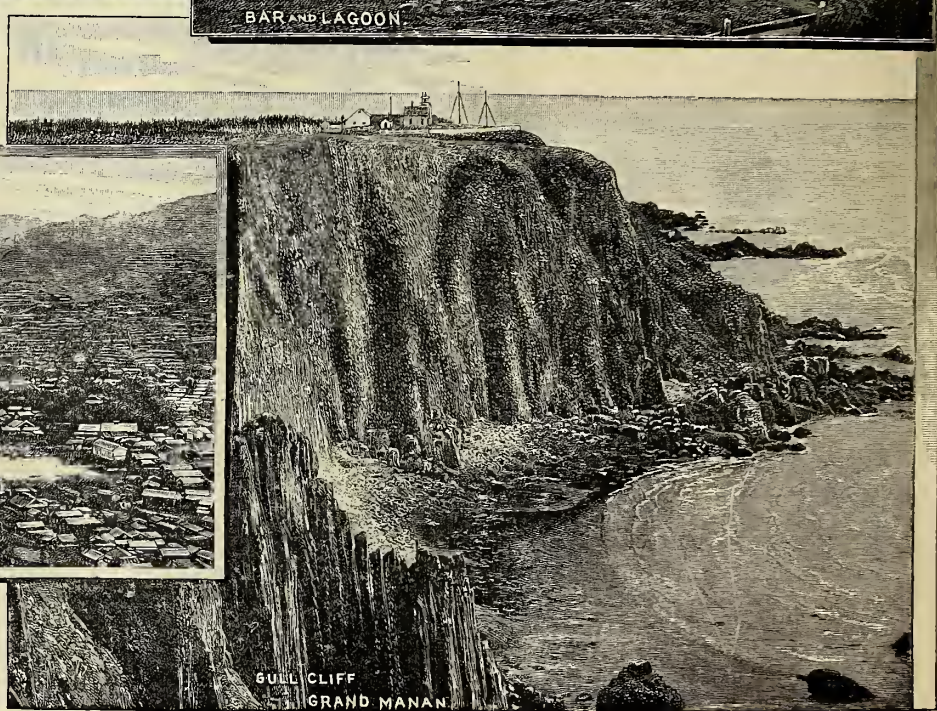
TIDAL MARSH.



BAR AND LAGOON.



BAY OR DROWNED VALLEY.

GULL CLIFF
GRAND MANAN.

Along such shores there are but few bays in which vessels can find shelter from winds and waves, but there may be good harbors in the river mouths.

Irregular shores occur where rough or rugged lands have partly sunk beneath the sea.

Along irregular coasts vessels find shelter in bays or behind islands. Many people living near such coasts become good sailors.

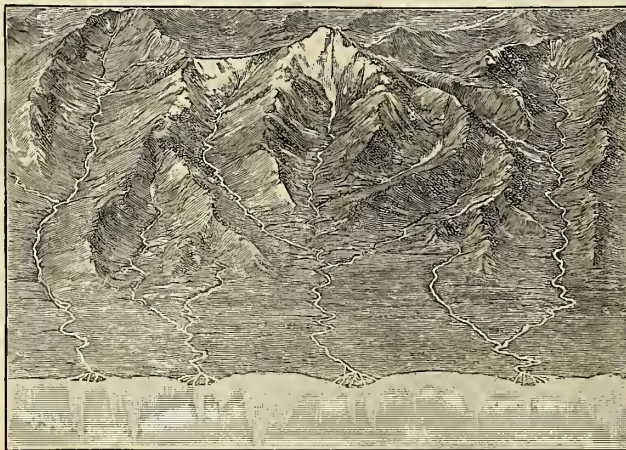
Valleys that have sunk beneath the sea are said to be *drowned*. The *drowned valleys* form *bays*. Deep, long and narrow bays are known as *fiords*. The ridges, hills or other parts of the land between the drowned valleys may form islands or peninsulas.

The smallest picture on this page shows several fiords formed by the partial drowning of the mountainous region shown in the picture beside it. Some fiords are many miles long and are very deep.

Bodies of water that afford shelter to vessels are known as *harbors*. Many fine harbors are found in the mouths of rivers or in drowned valleys.

Rock waste from headlands often forms *beaches* at the foot of *sea-cliffs*. Part of the waste is also carried by waves along the shores, where it is spread out into *beaches* or built into *bars*, cutting off parts of bays.

Waves often gather sand from shallow bottoms and throw it up in bars off low shores, thus partly inclosing



Mountains and Coastal Plain.



Fiords or Drowned Valleys.

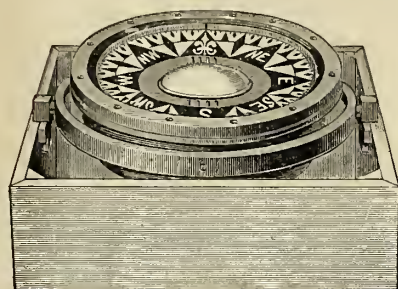
bodies of water, called *lagoons*. Fine waste from the land settles in the quiet lagoons, and water-plants then grow there. In time the lagoons may thus be filled with mud, roots and stems, forming *marshes*.

TOPICS : — Where straight shores are formed ; irregular shores ; drowned valleys ; fiords ; peninsula ; isthmus ; strait ; sound ; bay, gulf or sea ; harbors ; sea-cliffs ; beaches and bars ; lagoons ; marshes ; tides ; ebb and flood.

9. Directions on the Earth.¹

The earth is always turning round like a ball that spins as it flies through the air, but the earth turns only once in twenty-four hours, — a day and night.

The sun can light and warm only about one half of the earth at a time. As the earth turns, or *rotates*, some parts of it are turning into the sunlight while other parts are turning away from it. One side of the earth has day while the other side has night.



Mariner's Compass.

Bright daylight would be tiresome, if it lasted all the time, with no dark hours for rest and sleep. Endless night would be cold and dismal, if there were no sunshine to heat and light the earth.

Far away in the north, there is a point on the earth, known as the *north pole*. It is under the north star, which is often called the *pole star*. Opposite the north pole, on the other side of the earth, there is a point called the *south pole*.

The word *pole* means *pivot*, or point on which a thing turns. The earth does not rest on anything, but turns in space as if held by a line running from pole to pole. We can *think* of such a line, and we will call it the *axis* of the earth. No person has yet reached the poles. They are in regions of ice and snow.

In our land every *midday* shadow points towards the north pole, and so all north lines that we may imagine on the earth meet at that point. Going in the opposite direction, all south lines meet at the south pole.

East-and-west lines go round the earth in circles. The largest of these circles is midway between the poles and is called the *equator*, because it divides the surface of the earth into two *equal* parts. All east-and-west lines run parallel with the equator. When we face the north pole, *east* is along the lines to the right, and *west* to the left.

Of course there are no real circles to be seen on the earth, but we may imagine such lines and name or number them. We shall find that these lines are very useful in helping to locate places on the globe. The equator is far south of us. If we were near it we could see the sun overhead, or nearly so, at noon every day. The regions near the equator have no winter. The hot season lasts all the year. Snow and ice are not found there, except on the tops

¹ To teachers : Pupils should know how to find the points of the compass by midday shadows and by the north star. Doubtless this work has been done in the lower grades ; if not, a brief oral lesson will suffice.

of high mountains. By climbing any very high mountain near the equator, a person may find the same changes in climate as in going from the equator to either polar region.

The lands in the hot belt teem with life. Dense forests cover many parts of the surface. Birds, insects and large animals also abound.

We shall see maps of the earth in many positions, but we shall always be able to tell the directions on them, if we remember that *north and south are towards the poles ; east and west are parallel with the equator*. How many arrows on map A point north ? How many point south ? Which arrows point north on map B ? On map C ?

Which arrows are flying south on map B ? On map C ? How many arrows on map A point east ? Which fly east on map B ? On map C ? Which arrow points west on map A ? On map B ? On map C ?

A map of half a globe, or *sphere*, is called a *hemisphere*. *Hemi* means *half*. One of the little hemispheres on this page shows the side of the earth having the most water. The other shows the side having the most land.

How many lines on the *Land hemisphere* are drawn north-and-south ?

Which pole is not shown on map A ? How much of the earth appears on this map ? What line separates the northern hemisphere from the southern ? What point is in the center of the northern hemisphere ?

Knowing how to tell the directions on maps of various parts of the earth, we may now study the positions of the great bodies of land and water.



Map C.



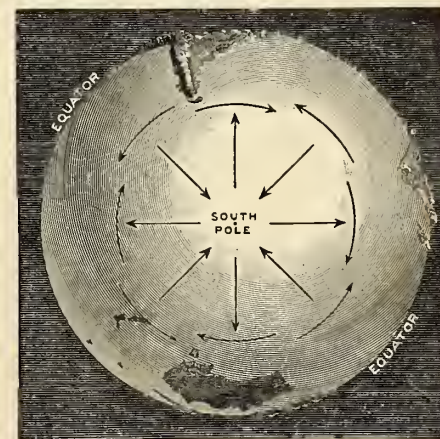
Water Hemisphere.



Land Hemisphere.



Map A.



Map B.

TOPICS :— What results when earth rotates ; poles and axis ; midday shadows ; equator ; north-and-south lines ; east-and-west lines ; effect of climbing mountains ; turn to various kinds of maps in this book and locate north, south, east, west sides.

10. Primary Highland or World Ridge.

Most of the lands on the earth are in large bodies, instead of being scattered in small islands.

The land is not evenly distributed over the earth. Most of it

On both sides of the primary highland, the land slopes towards the shores and there dips beneath the sea. Most of the longer slopes are on the inner side of the horseshoe-shaped highland. These slopes make wide plains between the primary

highland and the sea. In many places the shorter slopes, on the outer side of this highland, descend to narrow lowlands along the shores.

Mark on the map the place where you live. On which side of the equator are the ends of the primary highland? On which side are the widest lands? In how many places does the equator cross the highland? Which part of the primary highland



is north of the equator and therefore much nearer the north pole than the south pole.

About one fourth of the earth's surface is land,—the rest is water. Only a small part of the surface south of the equator is land. The sea is not wholly cut into separate oceans by the lands, but it spreads in one large body around them.

Through the great bodies of land, we can trace a long chain of highlands, somewhat in the shape of a horseshoe. We will call this chain of highlands the *world ridge*, or the *primary highland of the world*.

The greater part of the world ridge consists of long and wide plateaus, broken by mountains and valleys. In many places it is hundreds of miles in width. Some parts of the world ridge are not very high. In the far north the sea cuts through the ridge; in two other places the lands are joined by isthmuses.

is nearest the north pole? Nearest the south pole?

TOPICS:—Lands of the earth; world ridge or primary highland; slopes from world ridge.

11. Continents or Grand Divisions.

Each of the great highlands in the world ridge forms the backbone of a large body of land. These lands are North America, South America, Eurasia and Africa.

Southeast of Eurasia lies a great body of land called Australia.

Which of these bodies of land are north of the equator? Which are crossed by the equator?

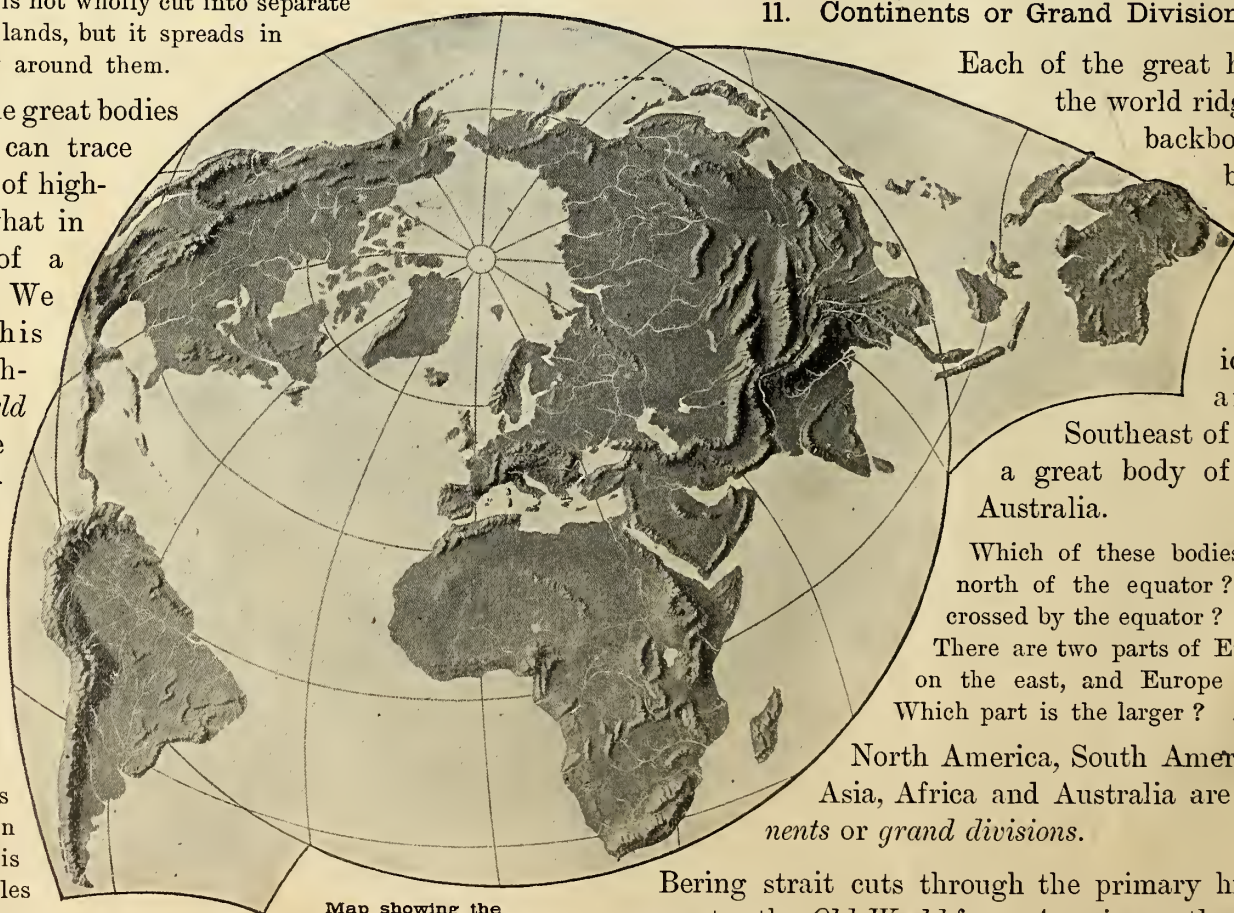
There are two parts of Eurasia,—Asia on the east, and Europe on the west. Which part is the larger? See map above.

North America, South America, Europe, Asia, Africa and Australia are called *continents* or *grand divisions*.

Bering strait cuts through the primary highland and separates the *Old World* from *America*, or the *New World*.

Which continents are in America? Which are in the Old World?

TOPICS:—Continents; America and Old World.



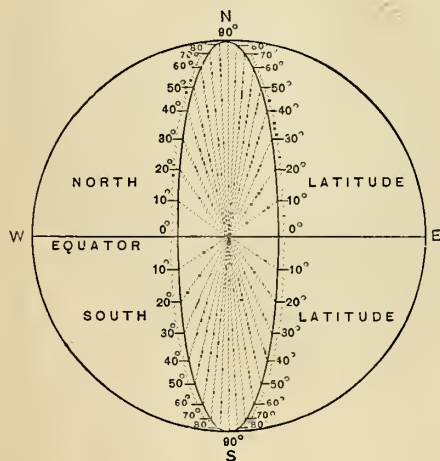
Map showing the World Ridge.



12. The Oceans.

There are five oceans or large parts of the sea. They cover about three fourths of the earth's surface and partly separate the continents from one another.

Most parts of the sea *near the land* are shallow. Far from the shores the sea is in many places two miles deep, and in some places the bottom is four or five miles below the surface.



The land and the surface of the sea have light by day and darkness by night. They have also warm and cold seasons. But no sunshine reaches the deep parts of the ocean. Those deep waters are always cold and dark.

We may think of the vast area of water around

the south pole as the main body from which all other parts of the sea extend like arms. Thus, the Pacific is a broad arm lying partly between America and the Old World, on the outer side of the primary highland. The Atlantic ocean is a long and crooked arm reaching northward between America and the Old World, on the inner side of the primary highland. The Arctic ocean is like a large gulf at the northern end of the Atlantic ocean. The Indian ocean is a short but broad arm partly between Africa and Australia. The Antarctic ocean spreads round the south pole.

What three oceans extend northward from the Antarctic ocean? Which ocean is east of America? Which is west of America? Which of these two oceans is the larger?

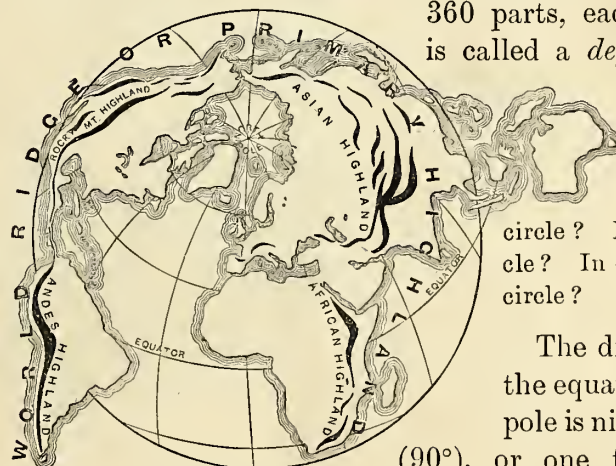
On which side of the Old



are grouped; positions of oceans and continents; sizes of oceans.

13. Latitude and Longitude.

Every circle, both large and small, may be divided into 360 parts, each of which is called a *degree*.¹



Map D.

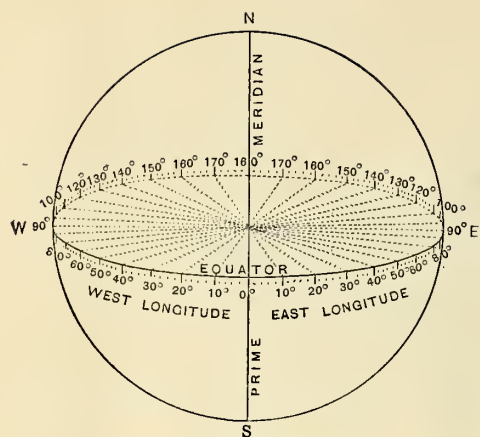
Key to the World Ridge Map, page 18.

How many degrees are there in one fourth of a circle? In half a circle? In one sixth of a circle?

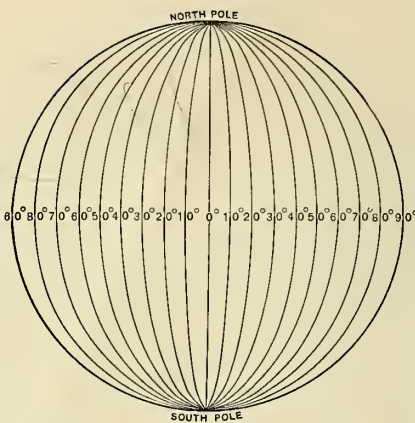
The distance from the equator to either pole is ninety degrees (90°), or one fourth of a great circle running north and south around the earth.

¹ A 60th part of a degree is called a *minute*. A 60th part of a minute is called a *second*. Ten degrees, thirty minutes and forty seconds may be written — 10° 30' 40".





Degrees of Longitude.



Meridians of Longitude.

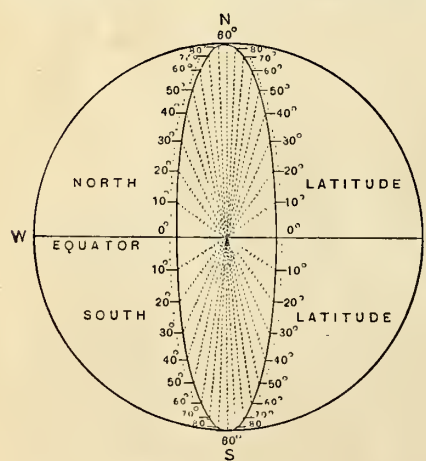
Round a globe we can draw many circles parallel with the equator. Such circles are called *parallels*. A parallel may be at 1° , 10° , 30° , or any number of degrees as high as ninety, from the equator. See diagrams on this page.

Parallels show how far places are north or south of the equator.

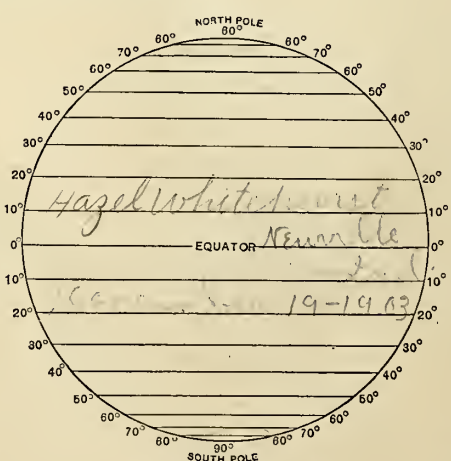
Thus the city of New Orleans is 30° north of the equator, — written 30° N. That city is at one third the distance from the equator to the north pole. See map of North America, page 25. There are many other places on the same parallel, or at the same distance from the equator.

All places on any one of the north-and-south lines running from pole to pole have midday at the same time. These lines are therefore called *meridians*, meaning *midday lines*.

We may think of any number of meridians and number them, beginning with either of them. The line with which the numbering begins is called the *prime meridian*, meaning the *first*.



Degrees of Latitude.



Parallels of Latitude.

The prime meridian most commonly used by sailors passes through *Greenwich*, near London. This is known as the *meridian of Greenwich* and is marked 0° on the maps. See map of British Isles, page 167. The meridians which show degrees are generally numbered from 1° to

180° east from Greenwich, and also from 1° to 180° west. These numbers count the degrees around the equator or the parallels.

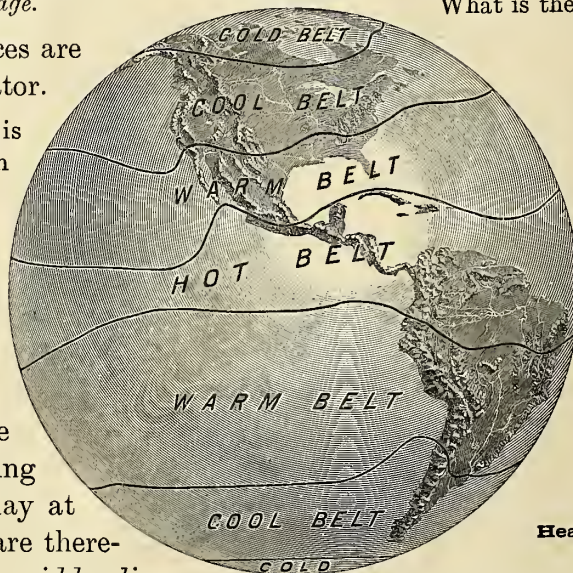
New Orleans is on the meridian 90° west of Greenwich, — written 90° W. Knowing both the parallel and the meridian of that city, we may locate it at 90° W. and 30° N.

The number of degrees at which any place lies north or south of the equator is called the *latitude* of that place. The number of degrees at which any place lies east or west of a given prime meridian is called the *longitude* of the place.

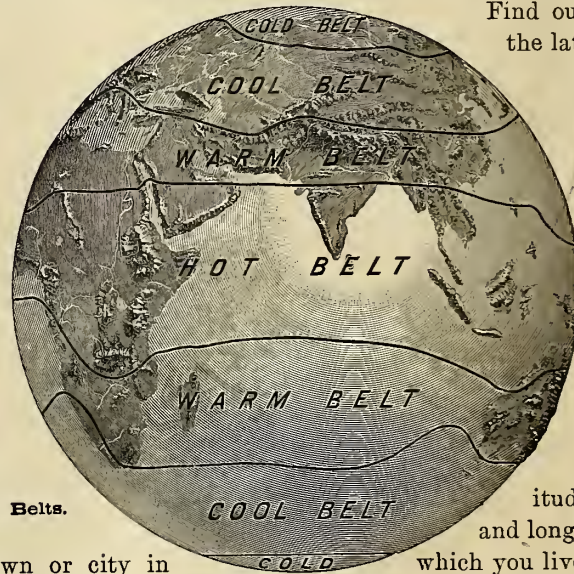
Latitude means the *broad way*; *longitude* means the *long way*. In ancient times, when nearly all the shipping in the world was on the Mediterranean sea, the *long way* was east and west; the *broad way* was north and south.

What is the latitude of New Orleans? What is its longitude?

Find out the latitude and longitude of the town or city in which you live.



Heat Belts.



tude of the town or city in

TOPICS: — Degrees; equator to poles; parallels; meridians; Greenwich; latitude; longitude.

14. Belts of Heat.

The sun is a hot globe more than a million times as large as the earth. This great globe is very far away, yet it keeps the earth warm enough to support life.

The average distance of the earth from the sun is about

93,000,000 miles. The sun's rays shine through clear air without warming it very much, but they warm the clouds and the dust in the air, and also the surface of the land and the sea. All these help to warm the air about them, but the land and the seas warm the air much more than the clouds and the dust do.

Figure 1 shows how the sun shines on different parts of the earth. Over the line B all the rays are nearly vertical. Over the

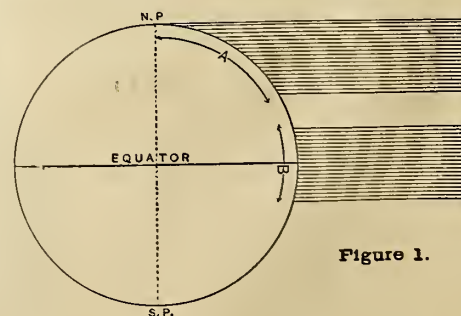


Figure 1.

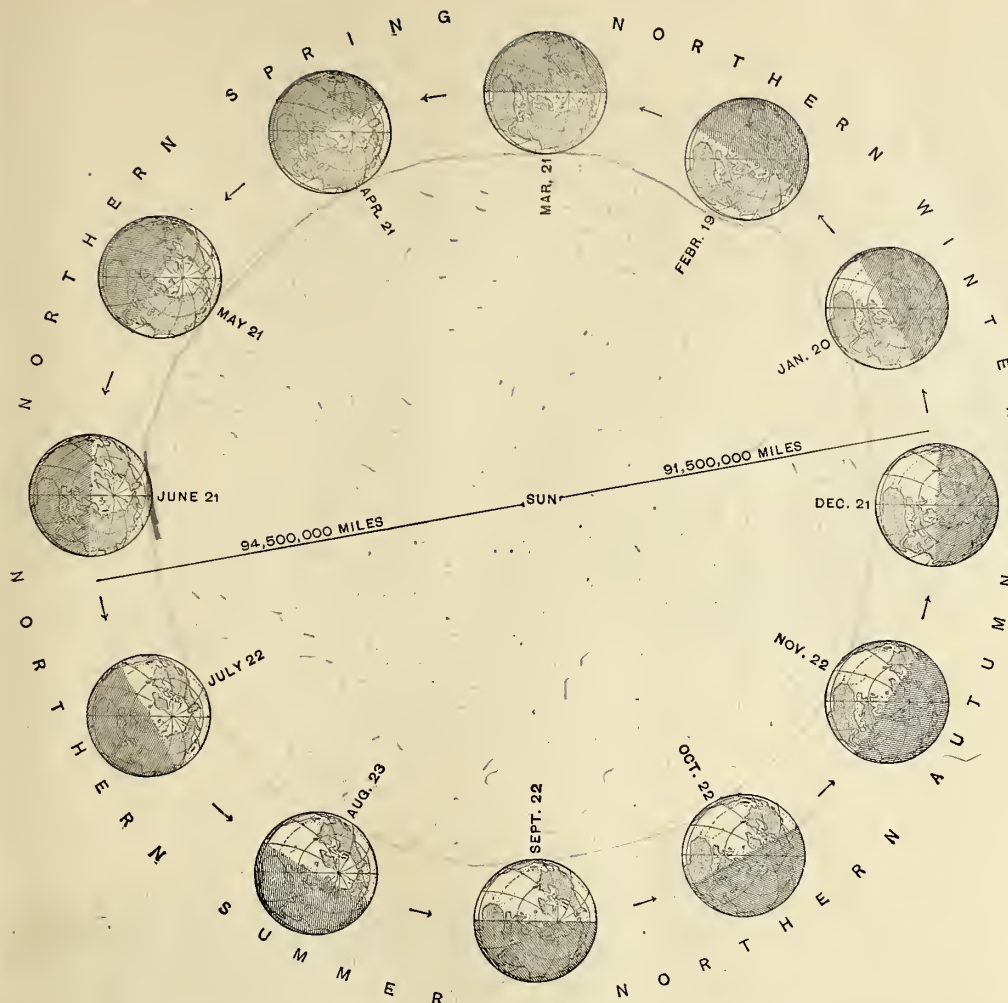


Diagram showing the Position of the Earth in its Orbit each Month.

line *A* the rays strike the earth with greater slant. As many rays shine on *B* as on *A*, but the slanting rays spread over the greater surface, and therefore cannot heat it so much. The more nearly vertical the rays are, the greater their heating power.

Near the equator the sun's rays are vertical, or nearly so, at noon every day. There the air is hot all the year, except high above sea level. That region of hot air is called the *hot belt*.

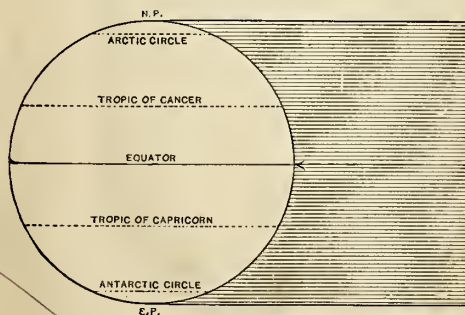


Figure 2.

Around the poles the rays are very slanting, and the air is always cold or cool. The polar regions are known as the *cold belts*.

Between the *hot belt* and the *cold belts*,

there are other belts neither so hot nor so cold. On either side of the hot belt lies a belt of land and sea on which the sun's rays fall with but little slant. We will call these two belts the *warm belts*.

Between the warm belt and the cold belt, on each side of the equator, lies another belt on which the rays fall with a great deal of slant. These two belts are the *cool belts*.

Between the heat belts, there are no sudden changes from hot to warm, from warm to cool, or from cool to cold. All the way from

the belt of greatest heat to the places of greatest cold, there is only a very gradual change.

Topics:—Size and distance of sun; how air is heated; hot belt; cold belts; warm belts; cool belts.

15. Change of Seasons.¹

Once a year the earth moves or *revolves*, in an almost circular path around the sun. This path is called the earth's *orbit*.²

The earth is one of many bodies, called planets, that revolve round the sun. The large diagram on this page shows which part of the orbit the earth moves through each month. The arrows indicate the direction in which the earth moves.

The earth's axis does not stand upright from the plane of its orbit, but slants so that the strongest sunshine falls north of the equator during about one half of the year, and south of the equator during the other half.

All the year the axis of the earth *points towards the north star* and is therefore called a *fixed axis*. Every moment the earth changes its own position with regard to the sun, but the direction of

the axis remains the same. The northern end of the axis leans towards the sun in June, when the sunshine is strongest north of the equator; and away from the sun in December, when the sunshine is strongest south of the equator. As the earth moves around its orbit, the sun's rays are strongest north of the equator during our spring and summer, but south of the equator during our autumn and winter.

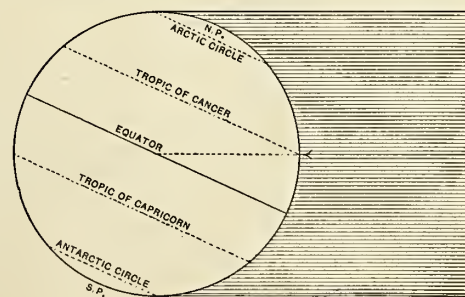


Figure 3.

Half the year, the vertical rays fall north of the equator, but they fall farthest north on the twenty-first day of June. At that time the northern summer and the southern winter begin. See figure 3. During the other half of the year the vertical rays shine south of the equator, but they

¹ The changes of seasons and the lengths of days and nights in the zones are subjects that can best be explained by the teacher with a globe in hand.

² The orbit is an ellipse, with the sun near the center.

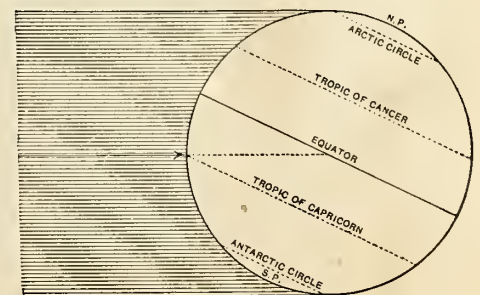


Figure 4.

shine farthest south on the twenty-first day of December,—at about Christmas time. Then the northern winter and the southern summer begin. See figure 4. Our spring opens on the twenty-first day of March, when the vertical rays fall on the equator, and the days and nights are everywhere of equal length. See figure 2.

The first day of our autumn (twenty-second of September) brings the earth to that part of its orbit where the sun again shines over the equator. See figure 2.

TOPICS:—Earth revolves; orbit; axis and north star; where sun's rays are strongest; day when each season begins and where vertical rays then fall.

16. Zones of Light.

The line around the earth, upon which the vertical rays fall when farthest north, is called the *tropic of cancer*.¹

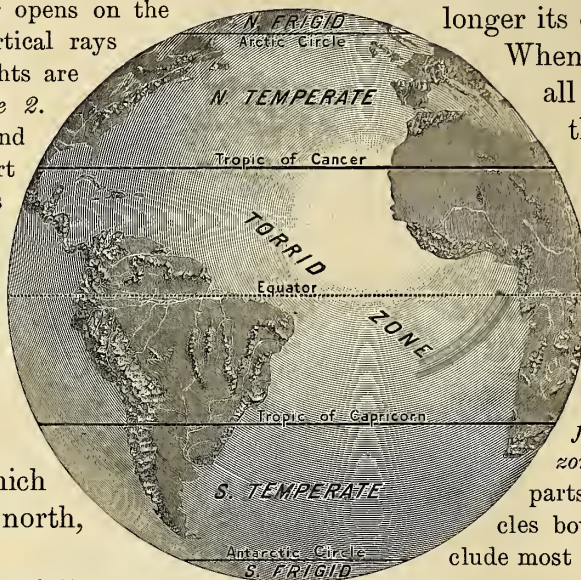
The line upon which the vertical rays fall when farthest south is called the *tropic of capricorn*.

The tropics are at about one fourth the distance ($23\frac{1}{2}^\circ$) from the equator to the poles. The belt of land and water lying between or within the tropics is called the *torrid*² zone. It includes the greater part of the hot belt.

When the sun is over the equator, the line between daylight and darkness passes through both poles. See figure 2.

When the sun is over the tropic of Cancer, the light extends about $23\frac{1}{2}^\circ$ beyond the north pole, but does not reach the south pole, because only about one half the earth is lighted at once. See figure 3. When the sun is over the tropic of Capricorn the south polar region is in the light, but the north polar region is in darkness. See figure 4.

When the sun is over the equator, every place from pole to pole has twelve hours of day and twelve hours of night. As the earth moves along that part of its orbit which brings the vertical rays farther and farther north of the equa-



Map of the Zones.

tor, the days in the northern hemisphere become longer and the nights shorter. The farther north a place is, the longer its daylight then lasts.

When the sun is farthest north, it shines all day within the *Arctic circle*. When the sun is farthest south, it shines all day within the *Antarctic circle*.

The Arctic and the Antarctic circles are known as the *polar circles*. They are just as far from the poles as the tropics are from the equator ($23\frac{1}{2}^\circ$).

Which of these lines bounds the *north frigid zone*? Which bounds the *south frigid zone*? The frigid zones include almost all parts of the cold belts or cold caps. What circles bound the *temperate zones*? These zones include most parts of the cool belts and the warm belts.

TOPICS:—Tropic of Cancer; Capricorn; torrid zone; where sunlight reaches; lengths of days; polar circles.

17. Seasons of the Heat Belts.

Cold Belts. The seasons in the cold belts are a long and very cold winter, and a short cool summer.

Even during the long daylight of summer, the air of the cold belts cannot become very warm, because snow and



Arctic Snow Crystals.

ice cover most of the land and sea near the poles and a large part of the sunshine is taken to melt a portion of this snow and ice.

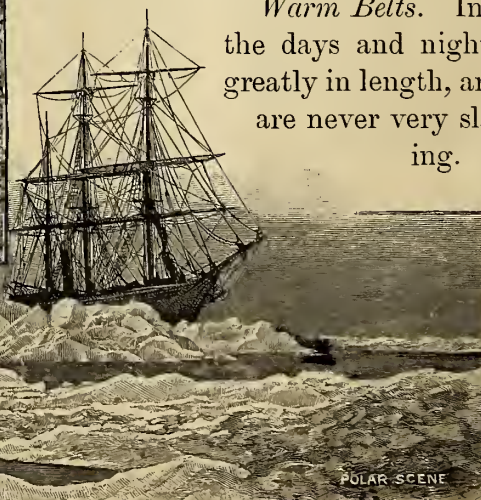
Cool Belts. In the cool belts the winter days are short, and the sunshine of that season is slanting and weak. The winters are therefore cold.

In spring and summer the days of this cool belt are long and the sun's rays are not very slanting. The summers thus become very warm.

Warm Belts. In the warm belts the days and nights do not differ greatly in length, and the sun's rays are never very slanting. The



Ferns growing on Trees, India.



Caught in an Ice Floe in Baffin Bay.



Eskimo Boy.

¹ The word *tropic* means the *turning place*, and applies to the line over which the sun *seems* to turn backward on its journey. Cancer, the *Crab*, and Capricornus, the *Goat*, are names of groups of stars through which the sun once seemed to pass when over the tropics.

² Torrid means *parched*; frigid, *cold*; temperate, *moderate*.

winters on the lands are cool but not cold. The summers are very hot.

Hot Belt. In the hot belt the slant of the sunshine varies but little, and the days and nights are always about twelve hours long. There the change of seasons is very slight, and there is no winter. The air is hot nearly all the year.

The *line of greatest heat* round the earth is called the *heat equator*. It shifts north and south once a year, always towards the places where the sunshine is strongest.

The positions of the heat equator in our winter and our summer are shown on the map below. The southern edge of the shaded belt is the heat equator for January. The northern edge is the heat equator for July. Let us not forget that our winter months are the summer months in places south of the hot belt.

During the time between January and July,—the first half of the year,—the heat equator shifts slowly northward, through the entire width of the shaded belt on the map. During the latter half of the year, the heat equator moves back again.

As the heat equator shifts north and south, the weather of all the heat belts shifts with it.

During our summer, hot weather spreads into the northern warm belt; the warm weather shifts into the cool belt; the cool weather shifts into the cold belt; the cold weather dwindles away and almost disappears from the north polar region.

During our winter, the cold weather of the northern cold belt spreads far southward over the cool belt; the cool weather shifts to the warm belt; and warm weather only is felt at the border of the hot belt.

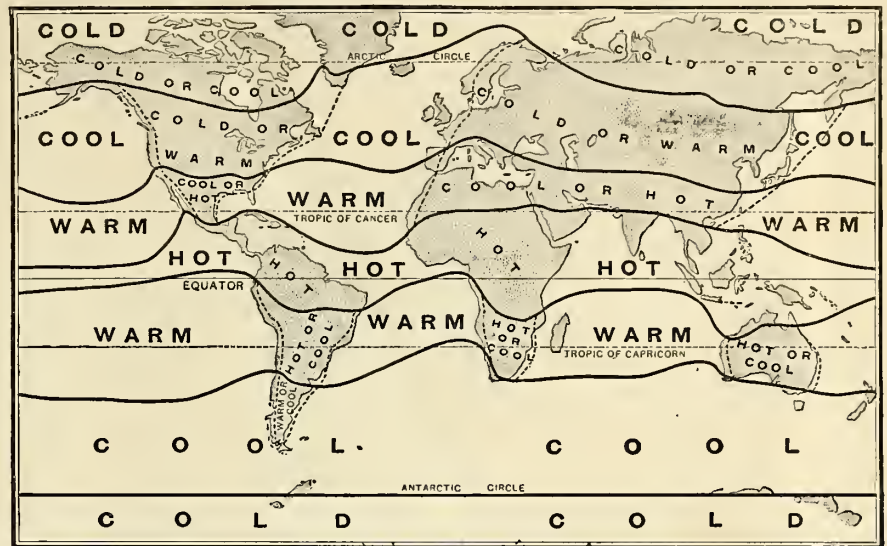
South of the equator, the opposite changes are meanwhile taking place.

In all the heat belts, the highlands are cooler than the lowlands. Even near the equator, the tops of very high mountains are covered with snow all the year.

TOPICS:—Seasons of cold belts; cool belts; warm belts; hot belt; heat equator; how weather shifts; weather of highlands.

18. Winds and Rainfall.

Winds. Cold air, being heavier than hot air, flows towards and creeps under the hot air, pushing it upwards. Not all parts of the



Heat Belts and their Seasons.¹

earth are heated alike; hence the air is kept in motion and winds are thus formed.

Winds flow into the hot belt from the regions on both sides. If the earth did not rotate, these winds would blow mainly towards the heat equator. The turning of the earth on its axis bends these winds westward, so that they flow into the hot belt from the northeast and the southeast.

The winds blowing into the hot belt from both sides are called the *trade winds*. On the oceans they are very steady, and blow with little change by day or by night.

Every wind takes the name of the direction *from* which it blows. The trade winds blow *from* an easterly direction and are therefore called *easterly winds*.

Near the equator, between the northeast and the southeast trade winds, there is a narrow belt where the winds are weak, often dying away to a calm.

This narrow belt of weak winds lies along the heat equator and shifts north and south with the sun. This belt is the region where the air from the trade winds becomes hottest and lightest and is therefore slowly lifted.

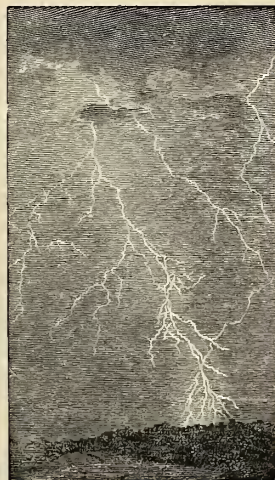
Outside the trade wind path, the winds of the warm and the cool belts vary in direction from time to time and are often stormy, but they blow mostly from the west and are therefore called the *westerly winds*.

The storms of the westerly wind belts are great whirling winds or *eddies* that drift along to the east—

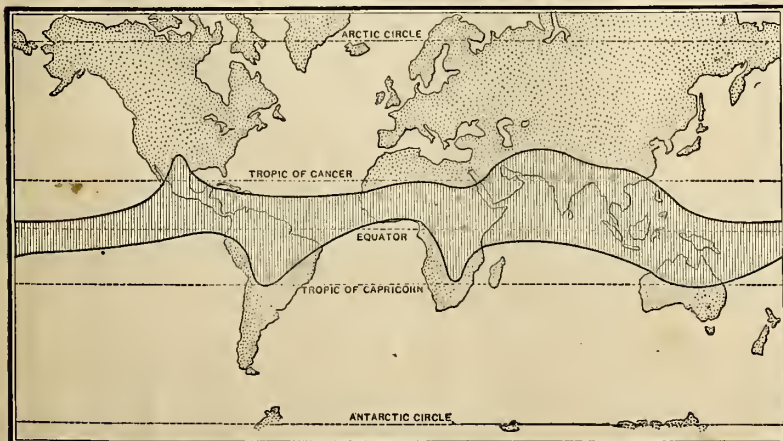
¹ Figure 5 shows the plan on which the above map of the *Heat Belts* is made. It is as if the places on the globe were lifted outward, away from the center of the globe, and drawn upon the paper cylinder, which is then cut apart and spread out as in the above map. In such a map, the cold and the cool belts appear much too large, for the polar circles are stretched to the full length of the equator.



Figure 5.



Lightning.

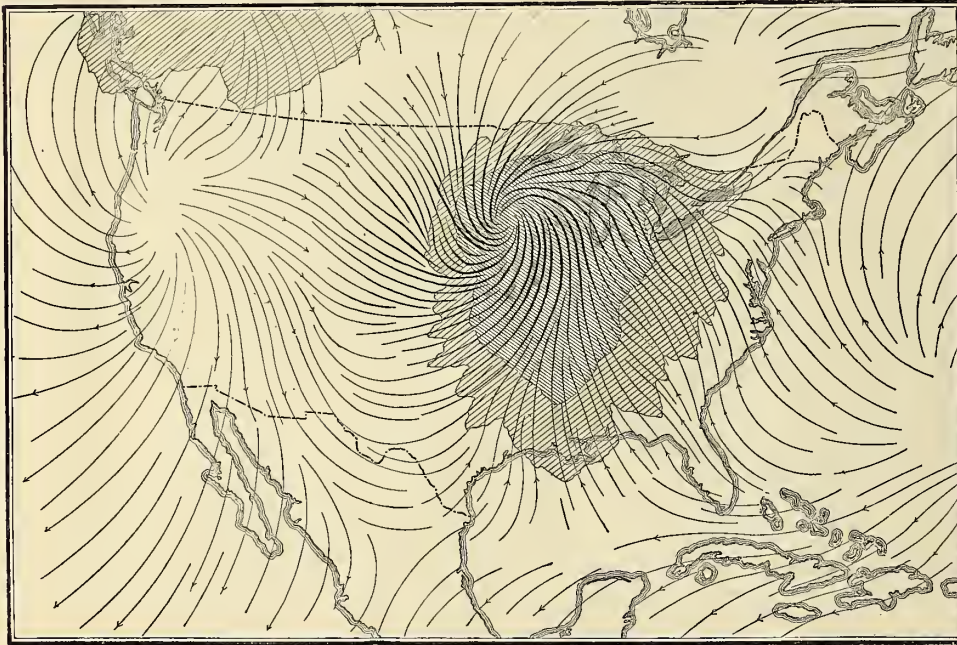


Range of the Heat Equator in Summer and in Winter.

ward over the sea and the land. In these winds are broad areas of clouds, often yielding rain or snow.

The map of the United States on this page shows a storm eddy crossing the country. As the cloudy and rainy eddy drifts east-

There is a very large amount of vapor in the belt of weak winds near the equator, and almost every afternoon or evening rains pour down. This rainy belt is called the *equatorial rain belt*.



Eddying Storm moving Eastward across the United States.

NOTE:—The arrowheads show that the winds are eddying towards the storm center, where the dark shading shows the rain area, and the lighter shading the cloud area. The winds, rains and clouds are whirling eastward. The small map on this page shows several of these storm eddies. See maps on the next page also.

ward, clear weather follows it. In the cold belts, the winds are variable and often stormy. They are called *polar winds*.

Rainfall. When the air is cooled it cannot hold so much vapor as when warmer. When cooled enough, the vapor in it forms clouds, often with rain or snow. When the air grows warmer it can hold more vapor, and no clouds then form in it.

The trade winds become warmer as they blow towards the heat equator and therefore do not give out rainfall unless they are chilled on the way. Lowlands in the path of these winds are generally dry, but the windward sides of highlands in the trade wind belts receive abundant rainfall.¹

When air rises to cross highlands, it expands and cools. Some of its vapor may then be condensed into clouds that yield rainfall on the slopes of the highlands.

Some of the great deserts in the world are lowlands in the path of the trade winds.

¹ The term *rainfall* includes rain, snow, hail and all other forms of falling water or ice.

and the rain belt has left Asia and moved out into the Indian ocean. The heavy rains now fall in northern Australia, mostly south of the equator in Africa and South America.

Thus in the hot belt the heaviest rains fall in each country when the sun is nearly overhead; and as the rain belt passes a

So much rain falls in the equatorial rain belt that the surface water of the oceans in this belt is a little less salt than the oceans under the thirsty trade winds.

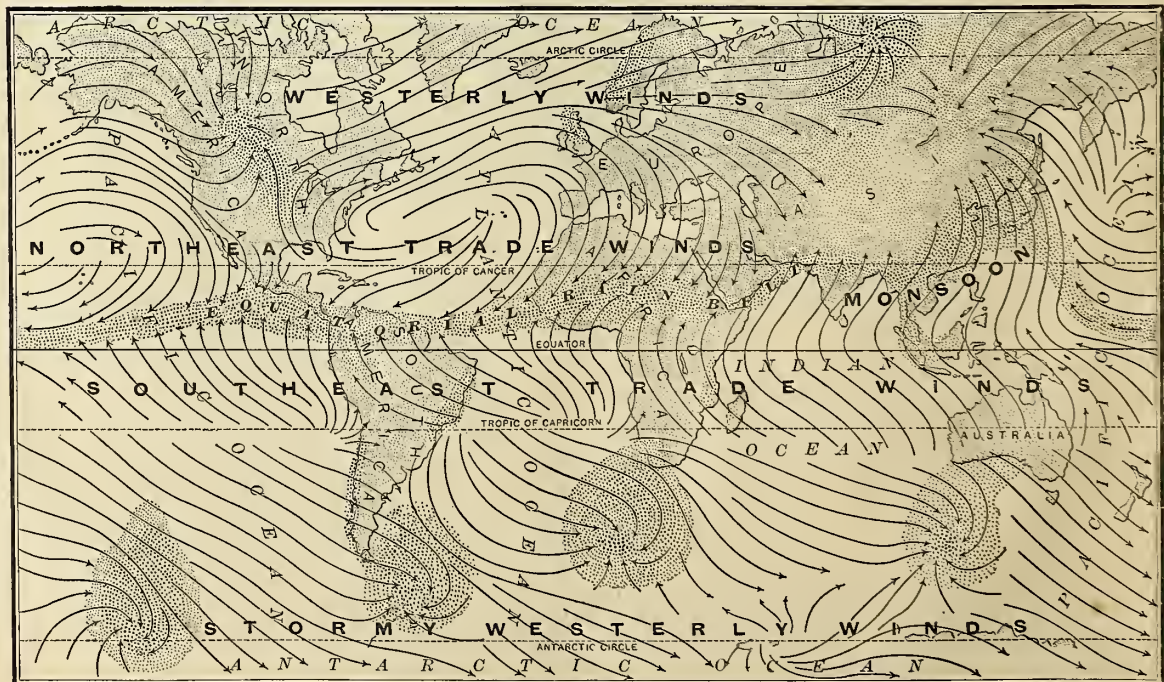
On highlands and on western coasts the rainfall from the storms of the westerly winds is very heavy. Far inland the rainfall is much lighter.

Let us not forget that the trade winds blow from the northeast and the southeast towards the heat equator and that there is a rain belt where these winds meet. We know that the heat equator shifts north and south as the sun seems to shift with the seasons. Thus the July map below shows the rain belt wholly north of the equator. Of course all the trade winds and the westerly winds have also shifted farther north.

On this July map the rain belt covers southern and southeast Asia, the broadest part of Africa, and the northern part of South America.

Let half a year pass and the January map shows that the rain belt has gone far south.

This is the summer time south of the equator, and the rain belt has left Asia and moved out into the Indian ocean. The heavy rains now fall in northern Australia, mostly south of the equator in Africa and South America.



Winds and Rains of July—Northern Summer.

country, there the drying trade winds blow in. These winds that shift with the seasons are called *monsoons*, or *season winds*.

Some places on or near the true equator are visited by the rain belt twice each year,—once as it moves north, and again as it

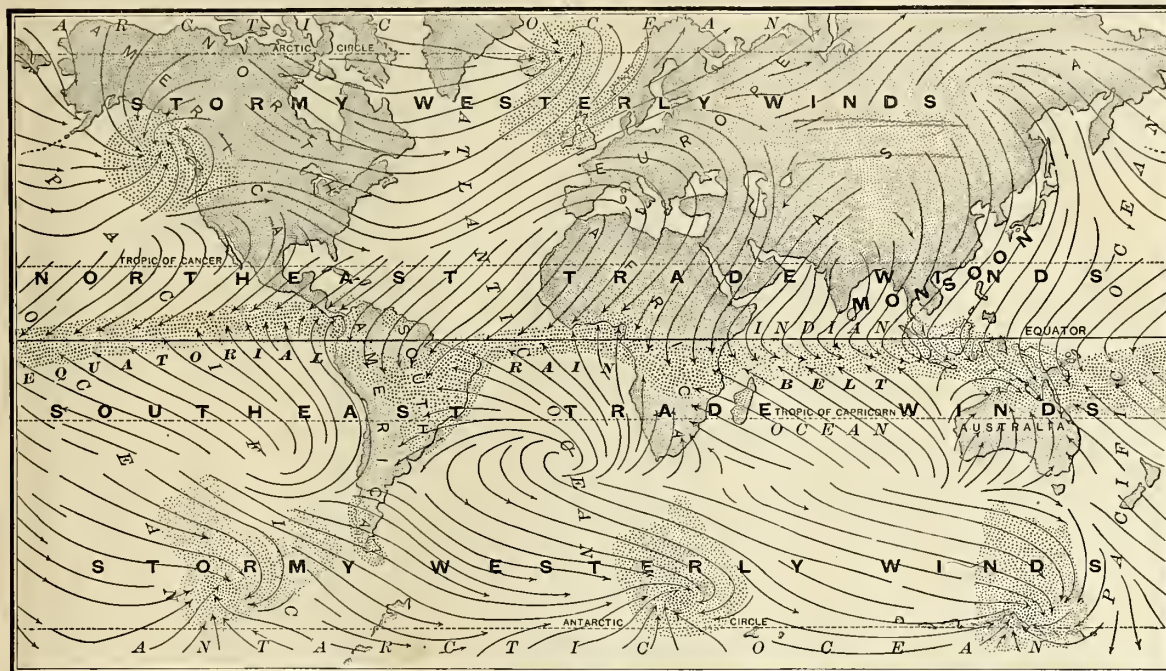
goes south. Such places have two wet seasons and two dry seasons yearly. In the lowlands having the single rainy season each year, grass and flowers grow in abundance while the wet weather lasts, but in the dry months the vegetation withers away. In some places the ground then becomes parched and dry, like a desert.

over that ocean. The ocean eddies north of the equator move slowly in the direction in which the hands of a clock turn. The ocean eddies south of the equator move in the opposite direction, or against the hands of a clock.

In the southern cool belt the oceans spread all the way round the earth. There the drifting waters on the southern sides of the Pacific, Atlantic and Indian eddies unite to form a great current sweeping slowly towards the east. This current flows entirely around the Antarctic ocean and may be called the *Antarctic eddy*. It receives cold water from the south polar ocean.

Part of the water of the North Atlantic eddy flows between the island of Cuba and the mainland of North America. The current issuing from this passage is called the *Gulf stream*. Joining the rest of the eddy, the Gulf stream spreads as a broad *drift* far to the northeast across the Atlantic ocean.

The large branch of the North Atlantic eddy which runs northeastward towards the Arctic ocean bears much warmth. This is the *drift* of the Gulf stream. Its water is warmer than the winds that blow over it towards the west shore of Europe, and so the water helps to warm the winds, thus making the climate of western Europe



Winds and Rains of January—Northern Winter.

TOPICS:—Cause of winds; trade winds; how winds are named; belt between trade winds; westerly winds; kinds of storms in westerly winds; polar winds; cause of rainfall; rainfall from trade winds; equatorial rain belt; rains from westerly winds; shifting rain belt; monsoons; life in equatorial rain belt.

19. Ocean Currents.

Winds blowing day after day for a long time against waves in the sea cause the surface water to drift slowly along and thus form *ocean currents*.

Rapid currents are called *streams*.

In each ocean the currents move in the general direction of the winds over them. The trade winds blow ocean currents westward, and the westerly winds blow others eastward. The lands prevent the currents from moving round and round the earth and require them to circle around or *eddy*, in each ocean.

The Atlantic and Pacific oceans have eddies both north and south of the equator. The Indian ocean has a large eddy south of the equator, but the ocean currents north of the equator flow back and forth with the season winds, or monsoons, which prevail

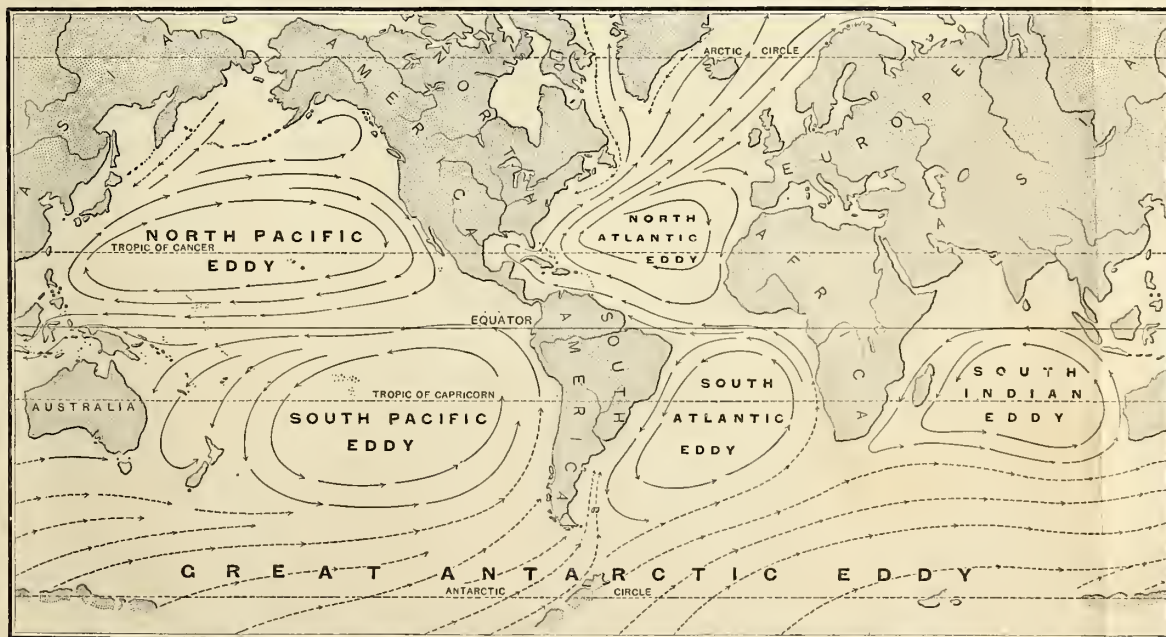
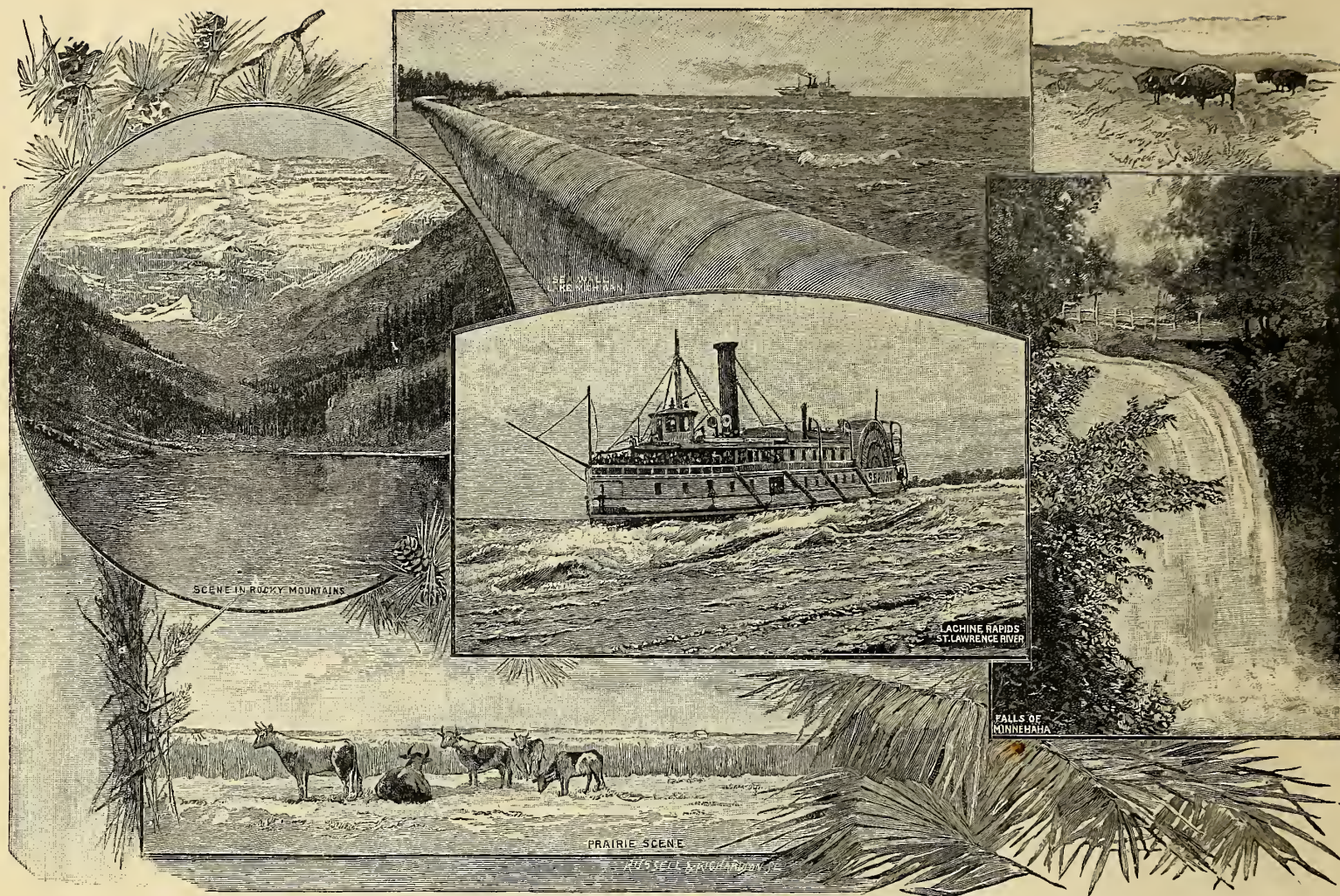


Chart of the Ocean Currents.

much milder than the shores of America on the opposite side of the Atlantic ocean.

A cold current from the Arctic ocean flows southward along the northeast coast of North America. The winds blowing shoreward from over this polar current are cold and chilly.

TOPICS:—Cause of ocean currents; eddies in oceans; Gulf stream.



NORTH AMERICA.

20. North America.¹

North America is broad in the north, but it tapers towards the south. This continent covers nearly one twentieth of the earth's surface.²

North America consists mainly of a great western highland, a lesser eastern highland and a central plain.

This continent crosses the warm and cool belts, and also enters the cold belt on the north and the hot belt on the south. Only a small part of the continent is in the hot or the cold regions. Far the greater part is in the belts having cold or cool winters and warm or hot summers.

In the warm belt the winter is short and mild, but northward the cold season lengthens, till near the Arctic coast there are only a few weeks of mild weather each summer. The extreme north of the continent is cold and dreary.

Only the southernmost part of North America is reached in summer by the equatorial rains. The highland of Mexico receives rains from the trade winds on its eastern slopes, but the western slopes are not well-watered. The wide middle portion of the continent is in the path of the eddying storms of the westerly winds.

The westerly winds from over the North Pacific eddy give a mild and even climate to the greater part of the west coast of North America, for the seasons over the broad ocean do not change so much as over the land.

In the interior of the continent, far from the sea, the summers are very warm and the winters very cold. There the change of seasons is much greater than near the coast.

On the east coast the winter weather is mild when the southeast wind blows from over the Gulf stream, but is very chilling when the northeast wind from over the Arctic current reaches the land or when cold air flows out from the interior of the continent.

When the cold heavy air of winter covers the interior of North America, not much moist air can flow in, and the inland rainfall is therefore not heavy. When the warm light air of summer spreads over the interior, the moist winds from the sea flow inland and give plentiful rains, except on the lowlands among the western mountains and on the plains along the eastern base of the Rocky mountains.

¹ The *Map Studies* on page 29 are to precede this lesson. Refer often to the relief maps. Locate every place named in the text.

² The area of the earth's surface is about 200,000,000 square miles,—more exactly, 197,000,000.

21. Map Studies.¹

On the relief map of North America locate the place where you live. *See opposite page.*

What oceans border on North America? What continent adjoins it on the south? In what direction is Europe from North America? Which part of our continent lies nearest Asia?

Turn to the map of the heat belts and tell what you can about the seasons in North America. *See map on page 21.*

Which part of North America is in the path of the westerly winds? Of the trade winds? *See maps on pages 22 and 23.*

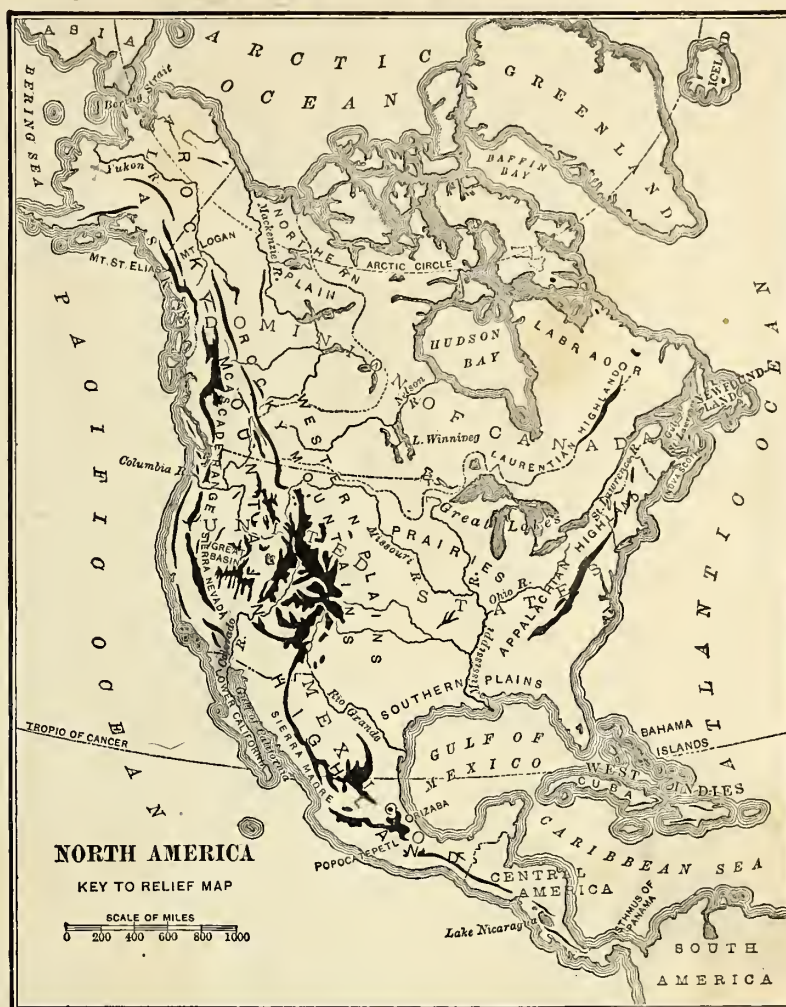
In what direction does the Rocky mountain highland extend? Along which side of the continent does it lie? Which part of this highland looks the highest? The widest?

Into what gulf does the Colorado river flow? Name a large river flowing into Bering sea.

Where is the Appalachian highland? In what direction does it extend? Is it higher or lower than the Rocky Mountain highland? Is it longer or shorter? Wider or narrower?

On which side of the Rocky mountains are there vast plains? Name the largest river flowing into the gulf of Mexico. What highlands are on the east and west sides of the Mississippi basin? Which part of the central plain is drained by the Mississippi river and its branches?

¹ For drawing and modeling, see *guide map* in the *Supplement*.



What river forms the outlet of the Great Lakes? What highlands are separated by the valley of this river?

Which portion of the central plain is in the basin of the Nelson river? Into what bay does this river flow?

Describe the course of the Mackenzie river. Which part of the central plain does it drain?

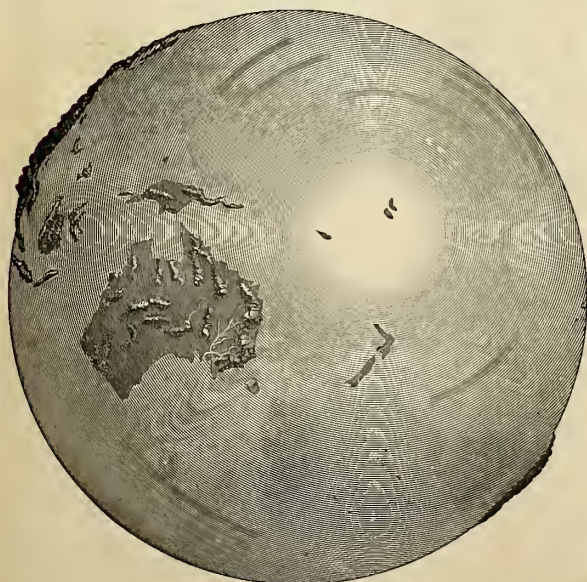
What bodies of water partly surround the peninsula of Florida? The peninsula of Labrador? The peninsula of Alaska? The peninsula of Lower California?

Sketch the general outline of North America,—using only three straight lines. In what general direction does the east coast extend? The west coast? The north coast? Which coast is the longest?

Draw the north coast of this continent; the west coast; the east coast. Which is the most irregular?

Note: Whenever the name of a city or a country is used, locate it at once on the *colored map* of the continent which is being studied.

All places named in the text can be found either on the *key maps* or on the *colored maps* in the *body of the book*. The *Index* affords a means of referring quickly to the various maps, pictures and pages of text. Statistics are in the *Supplement*.



Maps showing the Position of North America among the Continents and Oceans.

22. The Rocky Mountains.¹

The widest part of the Rocky mountain highland is about midway between the isthmus of Panama and Bering strait.

In this broad portion, lofty ranges almost inclose a vast plateau, about a mile above sea level and several hundred miles wide. The various ranges lying along the eastern side of this plateau are known as the *Rocky mountains*. This chain extends far northward into the basin of the Yukon river, and southward to the Rio Grande, at the

is spread over the lower land. The plains along the eastern base of the Rocky mountains are made of the waste which in past ages has been washed from the great range. Many of the Rocky mountain peaks are over two miles and a half high.

Where are the Laramie plains? See map on page 32. These plains are in a high plateau region that interrupts the Rocky mountain chain. The route of the first railroad built across our country leads over the Laramie plains.

South of the Laramie plains the Rocky mountains consist of parallel



place where that river forms the boundary between our country and Mexico.

In the Rocky mountains, as in all high mountains, bare crags stand out near the summits, and coarse stony waste creeps down the slopes into the valleys. The finer waste is washed farther and

¹ The surface of the United States, occupying a broad belt across the middle part of North America, is treated much more at length than any other part of the earth, not only because we ought to know the geography of our own country, but also because the full knowledge of the surface and resources of our land affords the best key to its history.

known as *parks*. The parks are lofty basins shut in by ranges on nearly all sides.

Among these are the *North*, the *Middle*, the *South*, and the *San Luis* parks. Each of these contains several hundred square miles of land that is quite level and is covered with rock-layers made of waste washed from the surrounding mountains. Some parts are wooded, and other parts are grassy or rocky.

The parks are drained by rivers that have cut deep and narrow valleys, or *canyons*, through the ranges. The sources of the Platte,

the Arkansas, the Colorado and the Rio Grande are in this park region. Railroads through this rough country often follow the canyons, but the wagon roads generally lead over the passes in the mountains.

Among the famous mountains of this region are Pikes peak and Longs peak. These rocky masses, patched with snow, may be clearly seen from the plains on the east of the great chain.

The Wasatch range rises along the western part of the Rocky mountains. The Colorado river receives streams from the east slope of the Wasatch range.

From the region of the Laramie plains the Rocky mountains bend towards the northwest and there the great western highland of the continent becomes narrower.

Where is the Wind River range? This high range contains sources of streams that belong in three large river systems,—the Colorado, the Columbia and the Mississippi.

Locate the Yellowstone park. This park has been reserved for the nation and is therefore called a "national park." It is famous for its geysers, hot springs, falls and canyons.

Some of the geysers throw streams of hot water more than two hundred feet into the air. Steam escapes with loud roaring and makes the ground tremble. The water in some of these fountains falls back into basins, to be belched forth again. In other geysers the water is broken into fine spray and is carried away by the wind.

In many basins the water does not spout but only rises and forms pools, or hot springs. These often overflow and make terraces of stone, like those in one of the pictures on the opposite page.

In Yellowstone park is a small body of water known as Two-Ocean pond. In ordinary weather this pond finds an outlet to the gulf of Mexico, through branches of the Mississippi river; but in times of heavy rains, part of the overflow from the pond reaches the Pacific ocean, by way of the Snake and Columbia rivers.

Two-Ocean pond is on the *continental divide*,—the divide between the slopes which descend to the Atlantic ocean and the Pacific.

The rainfall is not very heavy on those parts of the Rocky mountains which are in the United States, because the great chain lies far away from the sea,

and much of the moisture brought by the eddying storms of the westerly winds from over the Pacific ocean falls on high ranges near the Pacific coast.

The rainfall in the Rocky mountains, as in other parts of the earth, is heavier on the ranges than on the neighboring lower lands. Streams from the mountains feed many of the rivers, and canals from these are often led out to water the plains.

In summer, thunderstorms sometimes start over the high mountains and drift eastward, watering the plains east of the ranges. Snow often falls on the mountains, while rain is falling on the lower lands.

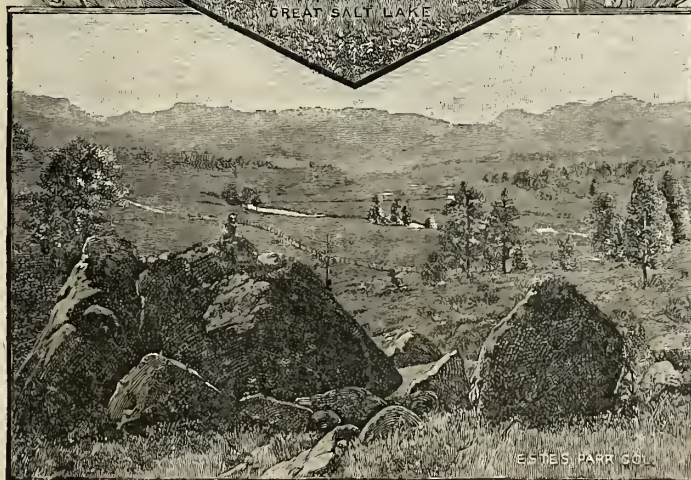
Only small parts of the Rocky mountains are forest-clad, but even this light supply is valuable, because the lower lands of this region are almost treeless, on account of the dryness.

This deep-worn highland yields more silver ore than any other part of our country.

Gold is another valuable product. The city of Denver has had very rapid growth because it is in the midst of a great grazing country on the plains and is near rich mines in the mountains.

Northward from the border of the United States, the Rocky mountains are not very far from the Pacific coast, and therefore receive plentiful rainfall. For a great distance the range is still lofty. Its summits are heavily snow-clad, and large glaciers are found on its slopes. The mountains, as well as the lower parts of the highland, are heavily wooded.

Owing to the vegetation on the slopes of the Rocky mountains in Canada, ore-bearing rocks are not so easily found there as in our own country.



Sagebrush.



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Key to Relief Map on pages 34 and 35.¹

23. The Sierra Nevada.

Where are the mountains that form the *Sierra Nevada*? This name means *snowy range*.

The lofty Sierra Nevada rises in steep slopes from the plateau on the east, but descends in gentle slopes to the low valley plain on the west. This range receives heavy winter snowfalls from the storms of the westerly winds. In summer, the rains are not plentiful, because the trade winds then reach farther north, and storms are fewer. The summer streams from the Sierra are fed by the melting snow.

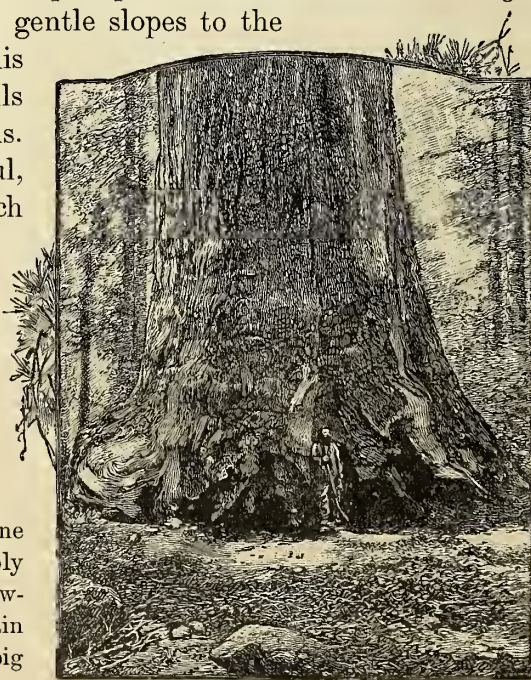
The broad uplands of the west slope of the range are heavily wooded. The east slope is drier, and its forests are therefore lighter.

Most of the Sierra forests consist of cone trees, — pine, spruce and fir. They supply lumber to the cities and towns in the lowlands west of the range. On the mountain slopes are found groups of the famous "big trees." Some of these are more than a thousand years old and have a height of over three hundred feet. They are the largest trees known in the world. Mt. Whitney, near the southern end of the range, is higher than any peak of the Rocky mountains in the United States.

Ages ago the Sierra Nevada was greatly worn down. When the surface reached the deeply-buried layers, veins of rock containing gold were then uncovered. There were grains and nuggets of gold in the waste which was washed from the mountains and which formed beds of gravel along their western base.

In that ancient time, volcanoes among the mountains poured forth lava that flowed down the valleys and buried the gravel of the river beds. In the ages which have since passed, the mountain region has again been uplifted and the volcanoes and the lava-flows have been greatly worn away. New valleys have been cut, and in many places the gold-bearing gravel under the lava has been laid bare. The gravel beds are now dug out for the gold which they contain.

The picture on page 140 shows how miners sometimes use water to wash down a gravel bed. The water forces the gravel down a trough, across the bottom of which are small cleats or grooves holding quicksilver. The gold is gathered by the quicksilver, and the gravel is washed away.



California "Big Tree."

¹ Key to figures and letters on the map: The heights of peaks are given in the *Supplement*.

- | | |
|----------------------|------------------------|
| 1. Yellowstone Park. | 4. South Park. |
| 2. North Park. | 5. San Luis Park. |
| 3. Middle Park. | D = Death Valley. |
| M = Mitchells Peak. | S = Mt. Shasta. |
| P = Pikes Peak. | V = Mt. San Francisco. |
| R = Mt. Rainier. | Y = Yosemite Valley. |

H = Mt. Hood.
J = Mt. Whitney.
L = Longs Peak.

The lava-flows blocked many river valleys and thus formed lakes. In time, many of these were drained and their beds became meadows, making the best farming lands now to be found among the mountains. One river has cut a deep valley from east to west across the northern part of the Sierra Nevada. Elsewhere the range can be crossed only over high passes.

The Yosemite valley is on the Pacific slope of the Sierra Nevada. *See map on page 32.* The depth of this wonderful valley is so great, and its sides are so steep, that hundreds of people visit it every year.

In some places, its steep sides are about half a mile in height. Beautiful streams from the upland leap over cliffs into the valley. In wet seasons, one small river falls more than a fourth of a mile, but during summer drouths it often dries up.

Southward from the Sierra Nevada, broken ranges extend into the peninsula of Lower California. This peninsula is in the dry belt along the outer border of the trade winds and is too far south to feel the westerly storms, even in winter.

24. The Cascade Range.

From the great volcanic cone of Mt. Shasta, the Cascade range extends far northward. As a whole, it is not so high as the Sierra Nevada.

A large part of the Cascade range is built of lava, and the highest peaks in this range are volcanoes. The sides of most of them are deeply worn, showing that a long time has passed since their lava flowed. Some of the peaks bear large glaciers. Mt. Hood is one of the highest.

In recent years a few peaks in the Cascade range have sent out small jets of steam, and at least two craters have given forth showers of ashes, but no lava-flow has been known to take place since white men first went to the region. The lava on some peaks is very firm and has flowed so recently that it has hardly begun to weather.

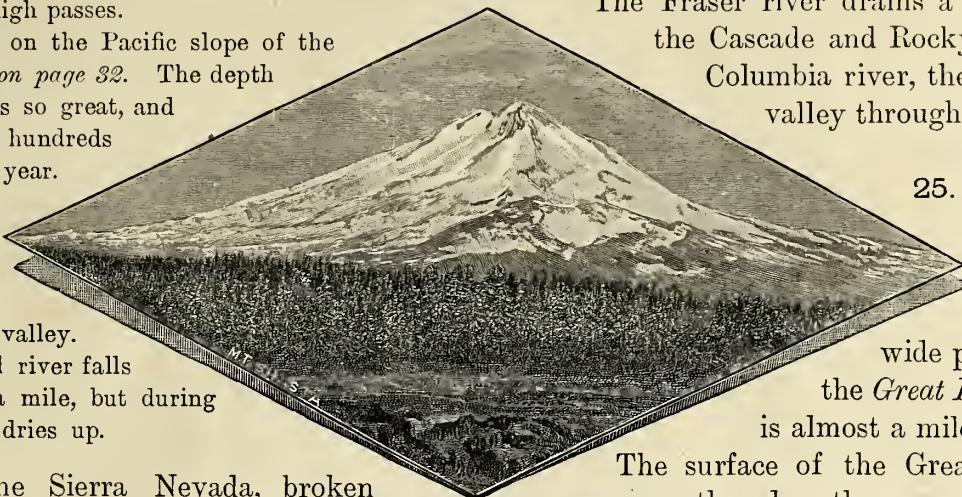
At the place where the Columbia river breaks through the Cascade range, the stream has cut a gorge down almost to sea level, draining the interior country where there was once a large lake. This deep gorge lays bare the edges of many lava sheets and shows them to be very thick.

Rapids break the flow of the Columbia river, at the place where it passes through the range. By means of canal locks, river steamers and other crafts can now pass these rapids.

The Cascade range is so far north that even in summer the trade winds do not reach it. The storms of the

westerly winds reach this range at all seasons, but the winter is the time of heaviest rainfall, as on all other coast regions in the path of the westerly winds. The mountains are covered with forests of valuable timber.

The Fraser river drains a rugged region between the Cascade and Rocky mountains. Like the Columbia river, the Fraser has cut a deep valley through the Cascade range.



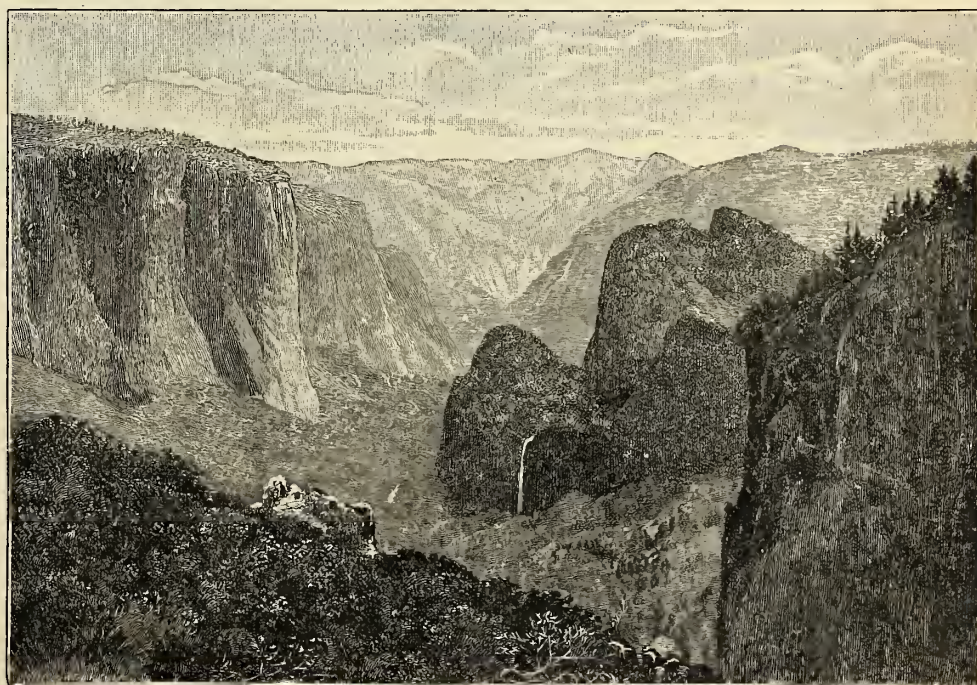
25. The Great Basin.

Between the Wasatch range and the Sierra Nevada lies a wide plateau region known as the *Great Basin*. The central part is almost a mile higher than sea level.

The surface of the Great Basin is broken by many north-and-south ranges, between which lie long *troughs* not many miles in width. The region is dry, because the high Sierra Nevada lies along its windward side.

There is more rain on the mountains than in the troughs, and streams have carved many valleys in the steep slopes of the ranges. The rock waste has been washed into the troughs, making gravelly and sandy plains. *See picture at the bottom of page 36.*

The rainfall being light, many of the mountain ranges are bare of trees, and the plains are almost deserts. In these plains, there are shallow hollows, or *sinks*. Winter rains flood the sinks and thus form lakes, but summer drouths cause the lakes to shrink. Some of the places covered by lakes in winter are smooth dry plains in summer. In these desert plains, the wind drifts the sand into dunes which often cover the surface for many miles.



Yosemite Valley, California.

The streams of the Great Basin dry up on the plains or enter lakes from which the water evaporates, for there is not enough water to overflow and cut valleys in the slopes to the sea.



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RELIEF MAP OF THE



UNITED STATES.



The plains
in the Great
Basin are so dry that
they are seldom

covered with grass, except along the streams running from the mountains. Canals have been made to lead water from these



Young Mountains or Tilted Blocks, — Northwest Part of Basin Region.

streams to irrigate parts of the plains. A few cities and towns have grown up along the streams and canals.

Some of the deep-worn ranges in this region have rich mines of gold and of silver ore. These have led to the building of other small cities and towns, but the Basin region is only thinly settled.

The streams of this region, like nearly all other streams on the earth, wash salt from the soil. The salt is formed by the weathering of certain kinds of rocks. The amount of salt carried by a river during an entire season may be very small, but if the river flows for ages into a basin having no outlet, much salt gathers there. Water standing in such a basin forms a salt lake.

There are many salty valleys and salt lakes in the Great Basin. One of these, Great Salt lake, covers an area of about two thousand square miles. This lake widens in rainy weather and shrinks in time of drouth. A cupful of its water contains a tablespoonful of salt,—more than four times the quantity in a cupful

of ocean water. Salt Lake City, the largest city in the Great Basin, is near the shore of this lake.

Many centuries ago, when there was a wetter climate, a much larger body of water filled the basin in which Great Salt lake lies. The old lake then overflowed northward at the lowest pass in the enclosing mountains and discharged to a branch of the Columbia river. The old shore lines may still be seen on the mountain sides, nearly 1000 feet above the level of Great Salt lake.

In what direction does the Humboldt river flow? This is one of the streams which run into sinks and form salt lakes. The first railroad built across the continent follows the Humboldt river past the ends of about fifteen ranges.

In the low southwest part of the Great Basin, there is a sink that dips below the level of the sea. This is known as *Death Valley* and is noted for its dryness and its intense summer heat. Still farther south lies the Mohave desert, stretching from the Sierra Nevada to the Colorado river.



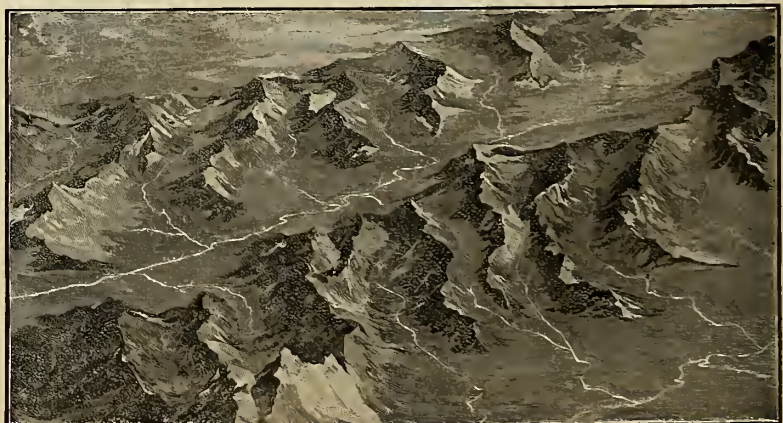
Colorado Plateau Region (page 37).

A region extending northward from the gulf of California was once covered by that body of water, but was cut off by the delta of the Colorado river. The region being very dry, the water in the old head of the gulf has long since dried away, leaving a desert plain. Sometimes a distributary from the Colorado river flows into the hollow and forms a temporary lake.

The Basin region includes not only the Great Basin, but also two smaller districts that are partly drained to the sea. One of these is southeast, and the other northwest, of the Great Basin. On the map (page 32) they are separated from the rest of the Basin region by lightly-dotted lines.

In the northwest part of the Basin region, the mountains are so young that no deep valleys are yet worn in their sides. These mountains are edges of huge blocks, tilted like those shown in the picture.

The shape of the blocks has hardly changed since the region was thus broken up. Lakes lie in the troughs between the tilted blocks. Most of the lakes have no overflow to the sea.



Basin Ranges and Troughs, — Wet Season.

26. The Colorado Plateaus.

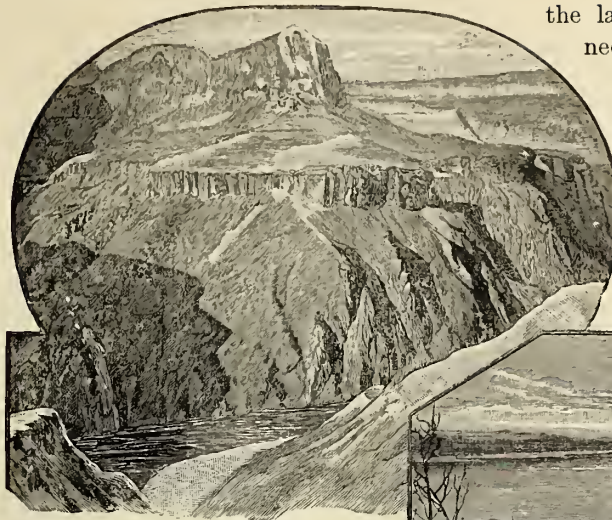
A broad region southeast of the Great Basin consists of lofty plateaus in which rivers have cut long and deep canyons. This highland region is known as the *Colorado plateaus*.

The rainfall on the Colorado plateaus is light, because high ranges lie to windward, near the Pacific coast. The higher and cooler parts of the plateau receive the most rainfall. The largest rivers in this region are fed by rains and melting snow on the Rocky mountains.

These plateaus were formed ages ago by the slow uplifting of great blocks of land, many miles long and wide. The surfaces of some of the blocks are a mile or a mile and a half above sea level.

The edges of the higher blocks form cliffs a thousand or more feet high. In many places the rocky layers rise one over another, in broad benches, as shown in a picture on the opposite page.

Across these plateau blocks, the Colorado river has cut a great

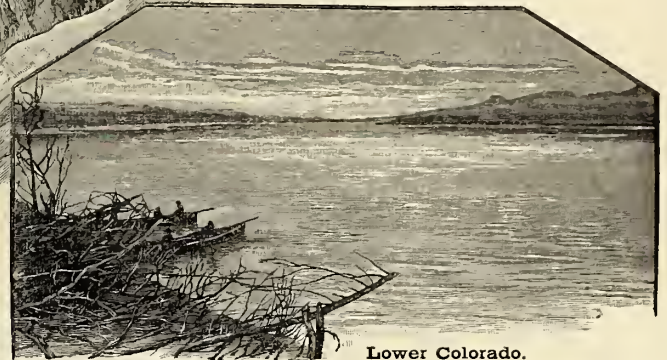


Canyon
of the
Colorado.

the lavas came are now to be seen. These necks form steep hills, or *buttes*.

Some of the lavas which flowed from the volcanoes to the lower land now form small table-lands, or *mesas*, — the surrounding surface having been worn away.

The Colorado plateaus are very thinly settled, for most

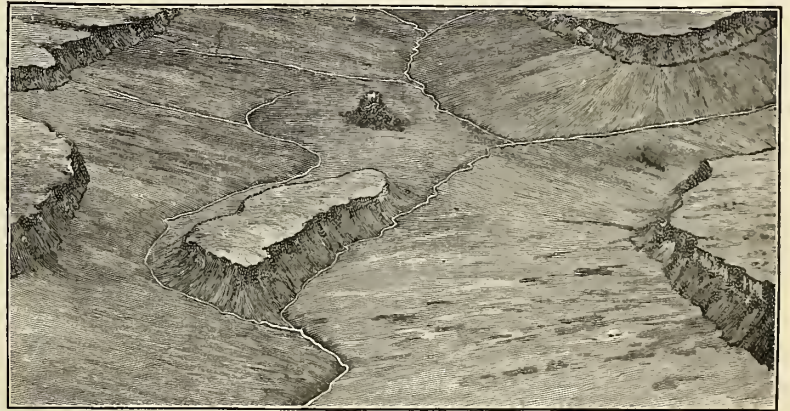


Lower Colorado.

parts of them are dry and barren, or covered with sage-brush. On several of the higher parts and near the



Young Volcano.



Mesa and Volcanic Neck.

canyon, with steep sides all rugged with spurs and ravines. There one may see the rocks, layer on layer, of which the plateaus are made.

For a long distance the Colorado canyon is about a mile deep. Its sides consist of rocks of many colors, — gray, brown, red, yellow and purple. At times of sunrise and sunset, first one color and then another catches the light or is thrown into shadow, — making a marvelous display.

The Colorado canyon is a young river valley. Unlike most valleys, it does not serve as a place to live in or as a route of travel. The rapids in the river prevent navigation; the canyon is so deep and narrow that it can be followed only with great danger; and travel across it from cliff to cliff is almost impossible.

Several large volcanoes have been built on the Colorado plateaus, and many lava-flows have spread over their surfaces. Some of the volcanoes have wasted away, so that only the *necks* through which

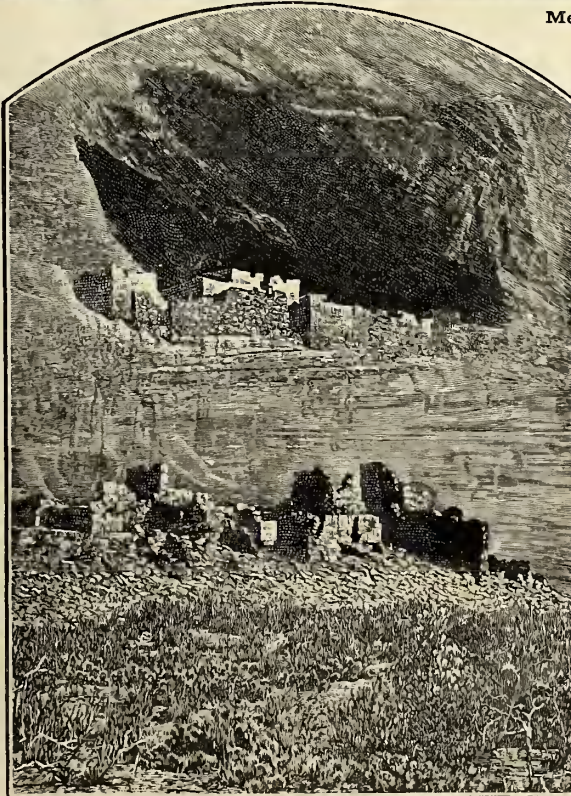
streams there are groves and grassy tracts.

On some of the mesas, tribes of Indians make their homes. The steep sides of the mesas afford protection from enemies.

Ruins of strange dwellings are found in shallow caves under the cliffs in some of the canyons of the Colorado plateau region. The Indians who made these dwellings disappeared before the white men set foot in that country. The people of that ancient race are now called "Cliff-dwellers." They knew how to weave coarse cloth and to make pottery. Their villages were built in the cliffs in order that the tribes might be safe from attack.

Many kinds of *cactus* plants thrive in this dry plateau country. Some of these are small, but others grow to trees.¹

¹ On the next page there are pictures of two species of *cactus* trees and also of a *tree yucca*, or *Spanish bayonet*. The latter has stiff bayonet-like leaves.



Ancient Cliff Dwellings.

27. The Columbia Plateau.

What large river drains the region on the north of the Great Basin? Name the largest south branch of this river.

What mountains are on the east and the west sides of the *Columbia plateau*. See map on page 32.

The Columbia plateau is about half as high as the Colorado plateau region. The north and east parts of the Columbia plateau are broken by rugged mountains. Great lava plains form the south and west parts. This plateau is in the path of the westerly winds, and receives more rainfall than the Great Basin, for the Cascade mountains are lower than the Sierra Nevada.

In the northeast portion of the Columbia plateau there are many fertile valleys. Some of these are wooded with pine and fir trees. Other parts have deep and rich soil which in recent years has yielded large crops of wheat.

The lava plains in the southwest are mostly dry and barren, except near the streams.

Long ages ago, the great lava-floods of this region were poured into a broad lowland where the lava cooled and formed an immense plain between high ranges on the east and the west. A picture on page 13 shows part of the lava plain, and one of the cuts on page 31 shows a cooled lava wave.

The lava plain of the Columbia region covers many thousand square miles,¹ and in places is hundreds of feet deep.



The Snake river has cut the longest and deepest of these canyons. Near the head of its canyon, the river plunges over the edges of some of the lava beds, making falls of great size and beauty. These are known as the *Shoshone falls*.

Along the sides of the canyon, both above and below the falls, can be seen the lava and ashes, layer on layer, through which the river has cut its channel.

¹ The lava-flows in this part of the continent cover from 150,000 to 200,000 square miles,—an area equal to about one twentieth that of our whole country. Part of the lava-flows took place in Canada. They are the greatest in the world, except perhaps those of the Dekkan peninsula, in India.

28. The Coast Range and Valleys.

West of the Sierra Nevada and Cascade mountains lie several mountain ridges forming a low *Coast range*. Being near the ocean, and in the path of the westerly winds, this range has a milder and more uniform climate than the regions in the interior of the continent. Most parts of the range are wooded.

Near the foggy coast north of San Francisco bay grow the giant *red-wood trees* which yield valuable lumber. The redwoods are almost as large as the "big trees" of the Sierra and belong in the same family. In the mountains south of the bay, there is one of the few places in the world where quicksilver is found.

One of the largest telescopes yet made is located on Mt. Hamilton, in the Coast range south of San Francisco. The object glass of the telescope is a yard in diameter. Seen through this great instrument, the moon appears to be only a few miles away.

The long lowland plain between the Sierra Nevada and the Coast range is called the *valley of California*. It is covered with waste washed from the mountains. This great valley has plentiful winter rains, but its summers are dry. Its principal products are wheat and fruit.

Many streams from the Sierra are still building up the floor of the valley plain with their flood deposits. The streams flow in shallow channels and are easily turned aside to irrigate the land.

The great port of San Francisco, on the fine bay of the same name, owes its rapid growth to the discovery of gold in the Sierra Nevada and to the wonderful fertility of the valley of California.

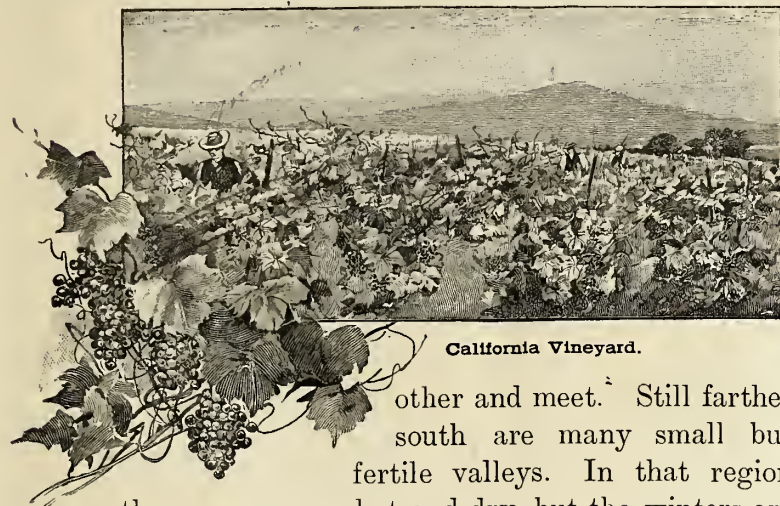


Orange Grove, California.

San Francisco bay is the drowned valley of a river that once cut through the mountains. It is the only break in the Coast range west of the Sierra Nevada, and forms one of the best harbors in the world. The streams which flow

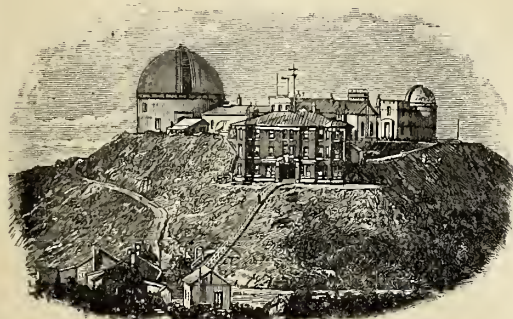
from the west slope of the Sierra run along the valley, then unite and enter San Francisco bay.

In the south the valley of California ends where the Coast range and the Sierra Nevada bend towards each



California Vineyard.

other and meet. Still farther south are many small but fertile valleys. In that region the summers are hot and dry, but the winters are mild and rainy. During the dry season, water for the fruit groves is led in ditches from the mountains. Oranges, lemons, grapes, and many other kinds of fruit thrive in the valleys.



Lick Observatory, Mt. Hamilton.

Owing to the mildness of the climate, the cities of southern California have become well known as health resorts.

The Willamette valley lies between the Cascade and Coast ranges. This region is well

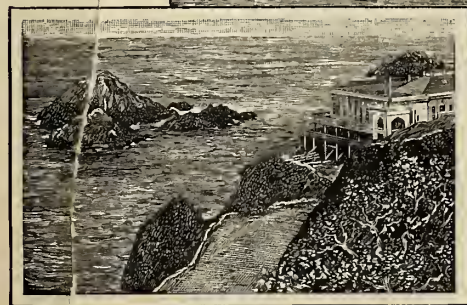
watered and is very fertile. Portland has a fine harbor on the Willamette river and has therefore grown to be the leading center of trade in the region.

Sand bars form at the mouth of the Columbia and make entrance difficult for large vessels. Massive stone walls, called *jetties*, have been built to narrow the channel and thus deepen the mouth of this great stream. The



San Francisco—Golden Gate. Columbia river is famous for its salmon fisheries.

Where is Puget sound? What large island partly incloses this great sound? See map of United States in the Supplement.



Old Cliff House and Seal Rocks.

Puget sound is a drowned valley that leads sea-water through the Coast range and forms many fine harbors. The region about the sound is in the path of the westerly storm eddies and is one of the leading lumber districts in the world. Its mountain slopes are covered with pine, fir and spruce.

For a long distance northward from the head of Puget sound, the mountainous coast region is broken by deep valleys, now partly sunk beneath the sea. The drowned valleys form many *fiords* running far inland, and also long *sounds* behind islands. Puget sound is the most important of these drowned valleys. Steamers can follow the quiet waters of these sounds and thus avoid the rough ocean outside.



Fur Seals, Pribilof Islands.

Rivers bearing plentiful waste from the mountains have built deltas at the heads of many of the fiords, thus forming smooth-floored valleys only a little above sea level.

29. The Yukon Region.

Northward from the Columbia plateau the highland is mountainous but not very high nor very wide, except in the border ranges.

What mountains border this region on the east? What range is on the west?

In the far northwest, the ranges of the Rocky Mountain highland spread apart in the great peninsula of Alaska. The main range bends westward along the coast, to the end of the Alaskan peninsula.

The greater part of Alaska is drained by the Yukon river. This is one of the largest streams in America. Most of its basin is cold, dreary and little known.

The southwest shore of Alaska has a mild climate, although so far from the equator. The ocean winds are

there warmed by the drift from the Japan current. Warm moist winds from the sea are chilled in rising over the mountain slopes in Alaska and therefore yield very heavy snowfall.

Among the high peaks of this region are Mt. Logan and Mt. St. Elias. For a long time Mt. St. Elias was thought to be the highest peak on the continent, but Mt. Logan, recently discovered a few miles farther inland, is more than



a fourth of a mile higher, — a little more than three miles¹ and two thirds above sea level.

Alaska belongs to the United States, but these high peaks are just east of the border line between Alaska and Canada.

From the snowy mountains in Alaska, many glaciers descend to fiords and yield countless icebergs. Streams flowing from beneath the glaciers build deltas in front of the ice. The delta shown in the picture on page 11 was thus made.

One of the pictures on this page shows the melting end of an Alaskan glacier. As the great stream of ice slowly creeps down from the upper snow-fields, rock waste falls upon it, and near the lower end trees grow in the soil on the ice. In the picture, the face of the glacier looks like a cliff almost hidden by the trees in front of it and upon it.

The shore-waters and many of the streams of Alaska abound in fish. The people in this district prepare great quantities of salmon for market.

Where is Bering sea? In summer large herds of seals visit the Pribilof islands, in Bering sea, to rear their young. Many of these seals are killed for their fine fur. The islands on the south, partly inclosing this sea, contain many volcanoes now active.

What lands are separated by Bering strait?

¹ Mt. Logan, 19,500 feet; Mt. St. Elias, 18,010 feet.

30. Highland of Mexico.

West of the gulf of Mexico rises the lofty highland of Mexico. This great mass of land is narrow in the south but broad in the north where it merges into the Basin region and the Rocky mountains.

The highest range of mountains running northward in Mexico is the Sierra Madre.

The narrow southern end of the *plateau* of Mexico is about a mile and a half above sea level. A chain of large volcanoes extends east and west across this end of the highland. Some of the craters are more than twice as high as the plateau.

Orizaba is the highest of these peaks, but its summit is more than a thousand feet lower than that of Mt. Logan.

Popocatepetl is another high peak in this volcanic region. Indians that live on the sides of Popocatepetl take sulphur in large quantities from the crater.

Northward from this chain of volcanoes stretches the lofty plateau. Below it, on the east, lie narrow marshy coastal plains. The region west of the Sierra Madre resembles the Basin region of our country.

Mexico lies north of the equatorial rain belt but is in the track of the trade winds. The wet season on the plateau and in the eastern coastal plain prevails in summer when the moist air from over the sea blows inland. Most of the western slope of the highland of Mexico is dry, because the winds that blow over it are warming on their way towards the heat equator. The region is too far north to be reached by the equatorial rains and too far south for the moist westerly winds. See map on page 22.

The highland of Mexico is so near the coasts that there are no large river basins on either side. In times of heavy rainfall, many small streams on the east slope rush down gorges that they are wearing in the side of

the plateau, and overflow parts of the narrow coastal plain.

Several low ranges divide the high plain into shallow troughs like those in the Great Basin. The rainfall is so light that from most of the basins there is no overflow to the sea, and therefore no deep canyons have been cut in these parts of the plateau. In rainy seasons water collects in the basins and forms lakes. When the rains are over, the water in many of the lakes dries away.

The eastern coastal plains of Mexico are hot and unhealthful. They consist largely of swampy land, densely wooded.

There are no good harbors, because there are no drowned valleys nor large river mouths. The gulf coast of Mexico is fringed with long sand bars built offshore by the waves. Vera

Cruz, the chief port, is on the narrow coastal plain, and sand bars partly protect the harbor from storms.

Because of height and nearness to the equator, the climate of the plateau of Mexico is mild all the year, and there are no long periods of great heat or cold. This plateau produces oaks, cedars and other trees, as well as many smaller plants like those in the southwest part of our country.

Millions of Indians and white people live on the plateau of Mexico. The chief city is called *Mexico*. It is situated in a beautiful hill-encircled valley nearly a mile and a half above sea level.



Mexican Cart.

31. Central America.

Which part of North America is called *Central America*?

Most of this region is rugged country. Its highest parts are volcanic ranges rising mainly along the Pacific border, but branching inland. These ranges are not nearly so high as the great volcanic range in Mexico. The Pacific coast of this region is bold and rocky.

Central America is in the belt of the trade winds and receives rains chiefly on the east slope. In summer this land has also the equatorial rains which water the west as well as the east coast.

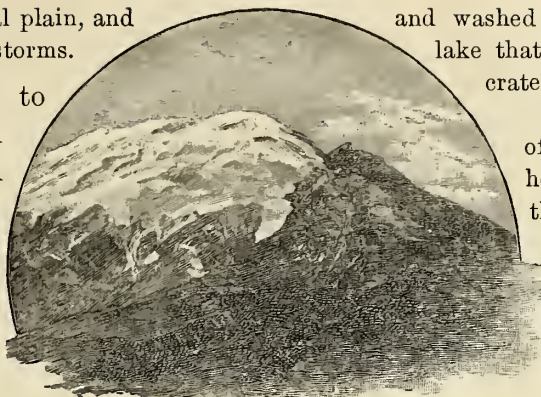
The eastern coastal plain of Central America is a continuation of that in Mexico. These damp lands are densely wooded and are covered with jungles in which many wild beasts live. Plants grow so quickly there that it is difficult to keep the lands cleared for farming.

Among the ranges of Central America are broad plains, or upland valleys, that average about half a mile in height. The soil of these plains consists mainly of weathered volcanic ash, very fine and fertile. Many white people, Indians and Negroes live in these upland valleys.

Locate Lake Nicaragua. This lake is part of a route that has been selected for a canal between the two oceans.

On an island in the lake there is a volcano whose sides were at one time laid out in beautiful gardens. Not many years ago, great streams of lava and ashes burst from the crater and flowed down the sides of the cone, burying the gardens many feet deep.

Another volcano in Central America poured a flood of water over a town



Popocatepetl, Mexico.

and washed away its houses. The water came from a lake that had formed in the crater. There are many crater lakes in this region.

In many parts of Central America are ruins of temples and idols made by Indians who held the land when the white men first went there. Most of the ruins are now overgrown with trees.

32. The Appalachian Highland.

East of the Rocky mountains spreads the great central plain of North America. This plain reaches from the Gulf of Mexico to the Arctic ocean.

The *Appalachian highland* is east of the southern half of the central plain. This highland extends southwest from the gulf of St. Lawrence nearly to the gulf of Mexico.

The Appalachian highland is well supplied with rainfall at all seasons. Moist winds reach it from over the gulf of Mexico and the Atlantic ocean. The slopes of the highland are wooded with oak, maple, cone-bearers and many other kinds of trees.

The Appalachian highland consists of several regions which may be named as follows:

The *Old Appalachian range*, — including the New England highland, the Blue ridge, the Carolina highland, and other ridges having various names.

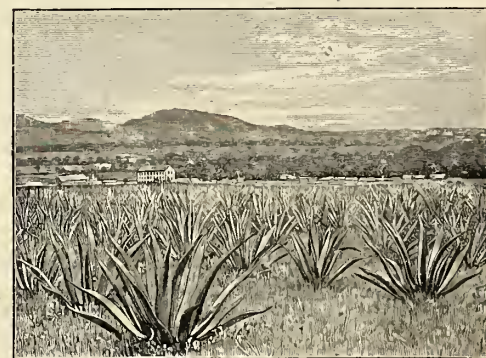
The *Piedmont Belt*. The word *piedmont* means *foot of the mountains*, and is here applied to the rolling or hilly land along the eastern foot of the Old Appalachian range.

The *Great Valley*, — a long and narrow lowland on the west of the Old Appalachian range.

The *Allegheny ridges*, — rising on the west of the Great Valley.

The *Allegheny plateau*, — a broad upland region next on the northwest.

The boundaries of these regions are shown by lightly-dotted lines on the map. See page 32.



Century Plants, Mexico.



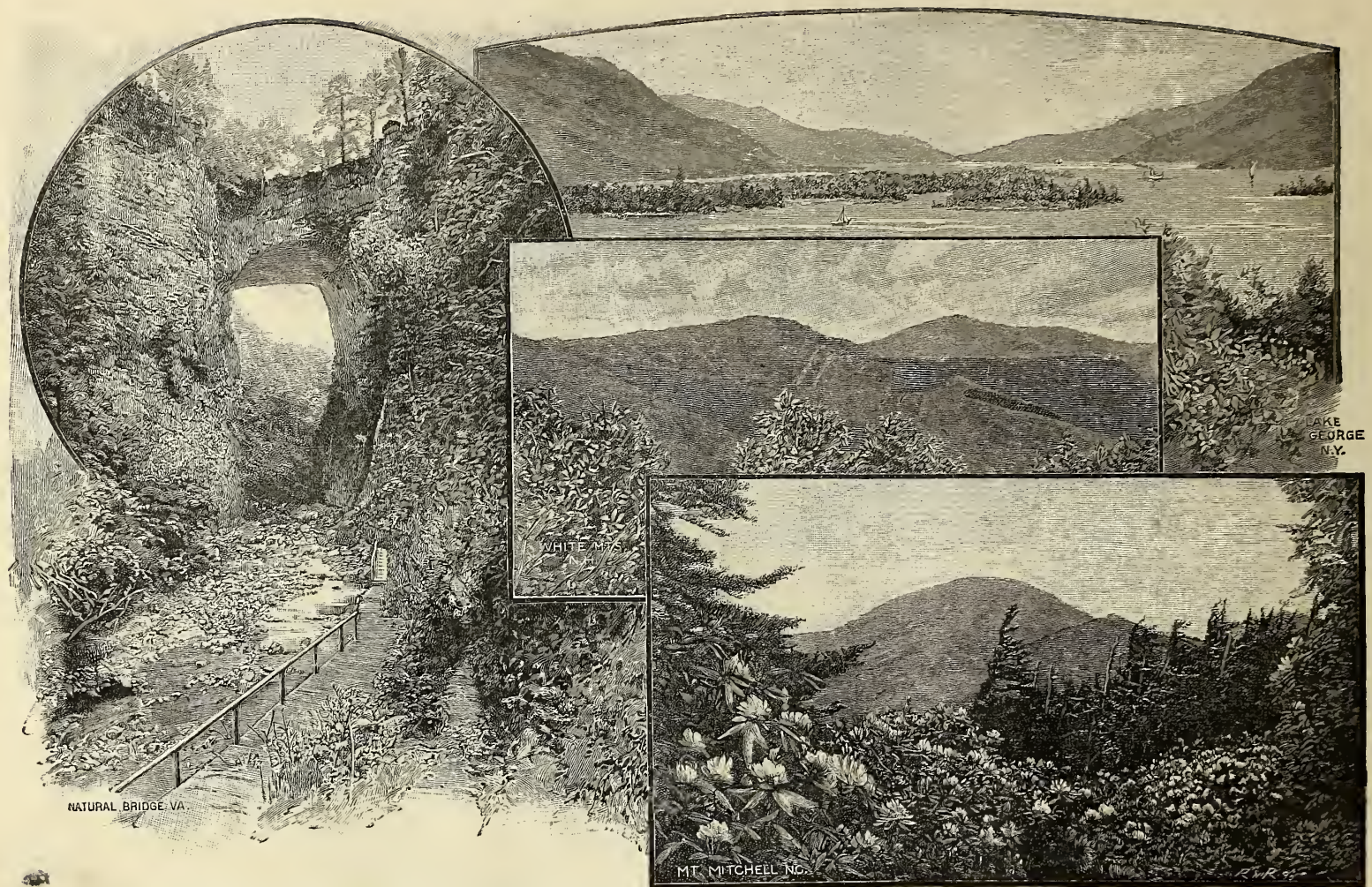
Water Carrier, Mexico.



Mexican Village.

Note: The large island of Newfoundland, though beyond the gulf of St. Lawrence, may be treated as part of the Appalachian highland. This island has sunk partly beneath the sea, making a very broken coastline. In the ocean southeast of the island are shallow places known as the *banks* of Newfoundland. These banks abound in cod, halibut and other kinds of fish.

The ridges of the *Ozark highland* resemble the Allegheny ridges. See lesson 35; also map on page 32.



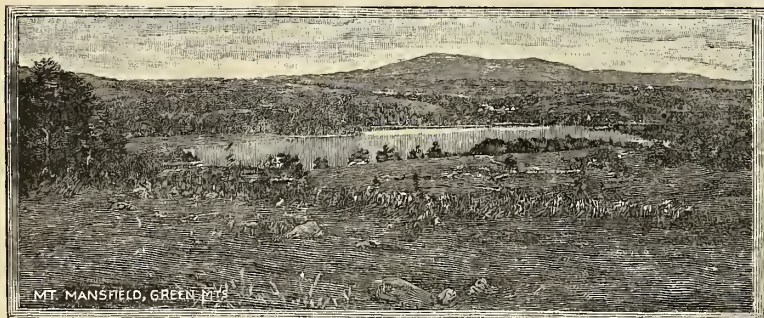
33. Old Appalachian Range and Piedmont Belt.

The portion of the Old Appalachian range known as the *New England highland* stretches from the gulf of St. Lawrence to the Hudson river.¹ This highland consists of a broad and rolling upland, above which rise hills and mountains. The surface is also broken by many valleys in which lakes abound.

The highest group of peaks in this highland is known as the *White mountains*. The Connecticut valley, with its

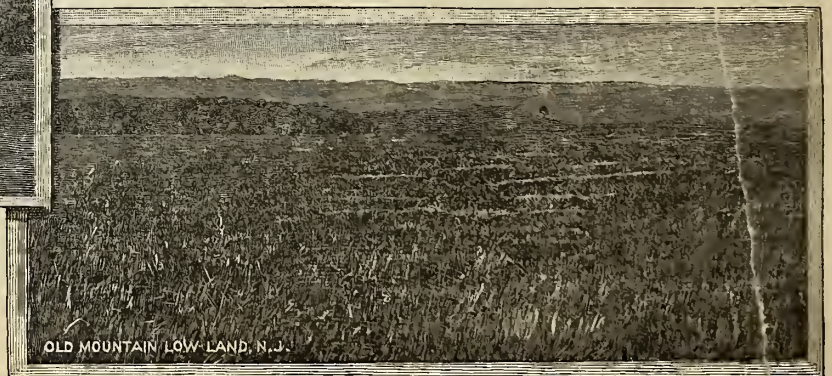
of this region are nearly all on the seacoast or near the falls in the rivers. Boston is the greatest seaport in this region.

The surface of the New England highland was heavily scoured by the ancient ice-sheet from the Laurentian highland. The weaker rocks were worn away, and rock waste was left unevenly spread over the region. When the ice melted, the streams were held back in the scoured basins and behind the barriers of drift, or rock waste, thus forming numerous lakes. Many of the streams were pushed aside from their old valleys and were made to flow over ledges from which they now fall in rapids and cascades. Since the ice melted, there has not been time for the streams to cut down the ledges and drain the lakes. Towns and cities have grown up



fine farming lands, lies between this group and the *Green mountains*.

Mt. Washington, one of the White mountains, is the highest peak in the northeast part of our country.



The rolling or hilly *piedmont* slope of the New England highland reaches to the sea. The cities and towns

at the falls and rapids where water power is supplied to many mills and factories. The coastline of this piedmont slope is very irregular, for the land has sunk partly beneath the sea, forming deep bays or fiords which separate headlands and islands. Waves

¹ The New England states occupy only part of this highland.

on the exposed shores are cutting cliffs¹ but the rocks are so hard that they wear away very slowly.

For some distance southwest of the Hudson river, the Old Appalachian range is neither so high nor so wide as in the New England highland. This lower part looks like a long and narrow plateau. Still farther southwest, the old range becomes higher and wider and is there called the *Blue ridge*.

On the south, the Blue ridge runs into the Carolina highland which contains the highest peaks in the whole range.

Mt. Mitchell, one of the Black mountains in the Carolina highland, is about a mile and a fourth high and overtops all other peaks in the Appalachian highland.

The piedmont slope east of the Blue ridge and Carolina highland is a hilly region gradually descending to the wide coastal plain, with its farm lands, its pine forests and its cypress swamps. This part of the piedmont is a fine farming district and is noted for its large crops of cotton and tobacco.

34. The Great Valley and Allegheny Ridges.

The Great Valley in the Appalachian highland is a long lowland, with mountains on the east and the west. At the north, the Great Valley opens into the St. Lawrence basin; and at the south, into the Gulf coastal plain. The greater part of the long valley is covered with farms.

The largest rivers rising in the Appalachian region do not run *along* the Great Valley but *across* it, and escape by deep and narrow gorges worn through the inclosing highland. The Hudson, Delaware, Susquehanna, Potomac and James rivers rise in the highland *west* of the Great Valley and flow across the valley and the Old Appalachian range. See colored map of Middle Atlantic states, page 145.

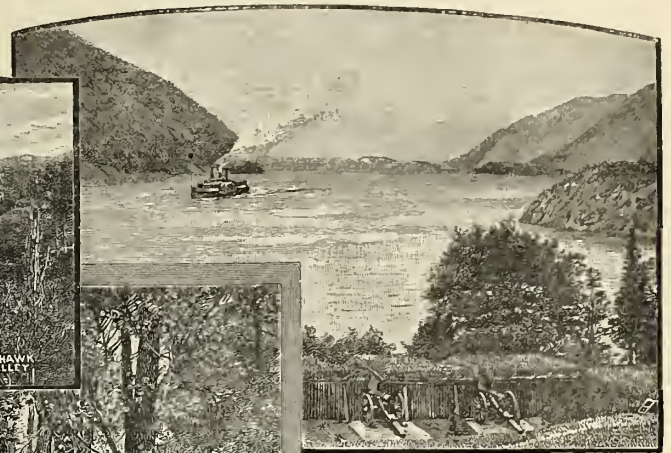
The Tennessee river rises in the old range *east* of the long valley, but flows westward across the valley and reaches the Ohio river.

The most important of these cross-gorges in the Appalachian range is that of the Hudson river, for it unites

with other valleys to make an open highway northward to the St. Lawrence basin and westward up the Mohawk river towards the Great Lakes. Northward the valley route leads through lake George and lake Champlain.



A Cypress Swamp.



Hudson Gorge, West Point.

A large part of the Hudson gorge has been slightly drowned, making a fine water way far inland from the seacoast.

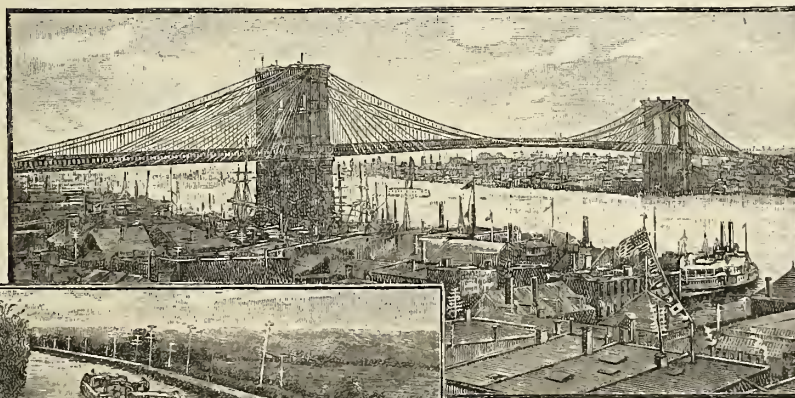
Nearly three fourths of a century ago, the long *Erie canal* was built along the Mohawk branch of

the Great Valley, from lake Erie to the Hudson river. This canal furnishes a cheap route of trade between the Great Lakes and the Atlantic seacoast. Railroads now follow closely along the same route. The great port of New York owes its growth largely to its position on an excellent harbor at the mouth of the Hudson valley, where trade can easily be carried on, both inland and across the oceans. The other gorges which cross the highland are also used as lines of travel.

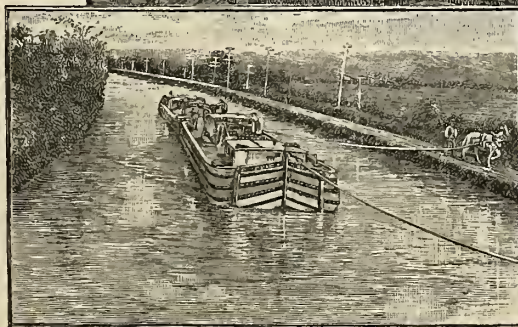
Water slowly dissolves limestone and thus forms caves or caverns. There are many of these in the Appalachian region. The Cavern of Luray, in the Great Valley of Virginia, is one of the most beautiful.² See picture on page 44.

The roofs of caves sometimes fall, making deep gorges; or only a small part may remain standing in the form of an arch. The Natural Bridge shown in the picture on page 42 is in the Great Valley. This rocky arch is over 200 feet high. See colored map of Middle Atlantic states, page 145.

The long even-crested ridges or folds west of the Great Valley, as far north as the Hudson gorge, may be called the



New York and Brooklyn.



Erie Canal.

¹ See pictures of Grand Manan, page 14.

² Mammoth Cave, Kentucky, is larger than that of Luray.

Allegheny ridges. They often extend for many miles in a straight course, without any peaks. *See note to picture below.*

These ridges are all forested, and the valleys between them are good farming lowlands. The streams which gather in these inner valleys escape through narrow notches, or *gaps*, in the ridges. The chief railroads and wagon roads enter the inner valleys through these gaps.

The northern part of the Allegheny ridges supplies almost all the hard coal and some of the iron ore used in our country.

35. The Allegheny Plateau.

The eastern side of the Allegheny plateau falls by steep slopes into valleys next to the Allegheny ridges. On the west and south, the plateau descends gradually to the prairies and the Gulf coastal plain.



The rocky layers of the plateau contain beds of soft coal and iron ore. The many valleys cut by branch streams expose these valuable beds on the slopes, so that they can be easily found and mined. The northern half of the plateau yields great quantities of petroleum and natural gas.

Pittsburg has grown up at the place where two rivers unite to form the Ohio. This city is noted for its coal trade, iron mills and glassworks. The Ohio river forms a fine water way from Pittsburg to the Mississippi river.

The southern half of the Allegheny plateau is mostly drained by two large tributaries of the Ohio river. These streams and their

branches have worn deep valleys, making a very rugged region. Travel is difficult and this part of the plateau is not so thickly settled as that farther north.



This plateau is so greatly worn by branching streams that it is known to be older than the smoother plateau of the Columbia basin, where the valleys are narrower.

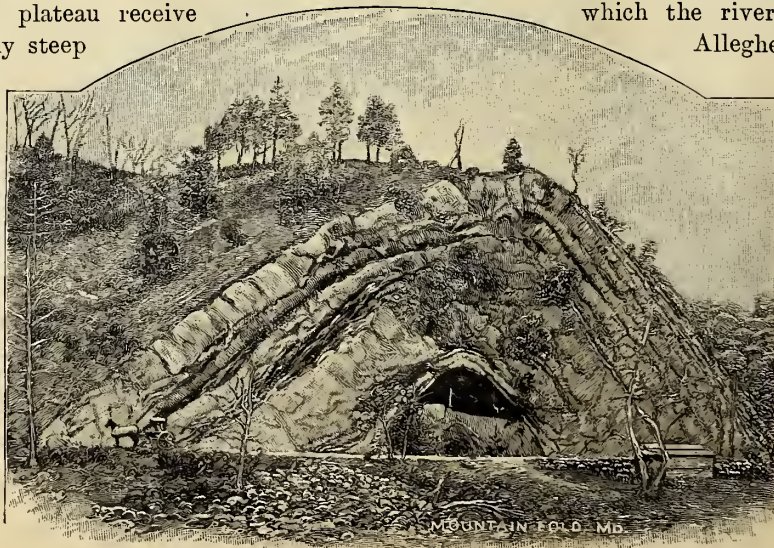
The rivers of the Allegheny plateau receive water so quickly from the many steep valley-slopes that they often rise thirty or forty feet in floods. Nearly all these rivers flow into the Ohio.

Most of the higher parts of the Allegheny plateau are forested and yield valuable timber. The lower western portions of the upland have been cleared of trees and now form rich farming and grazing districts, — famous for wool and for dairy products.

The Ozark highland, west of the Mississippi river, resembles parts of the Appalachian highland. The southern part of the Ozark region has many straight and even-crested ridges through which the rivers have cut gaps like those in the Allegheny ridges.

The northern half of the Ozark highland is a plateau whose main slope is towards the Missouri river. This plateau is greatly worn by streams and in form resembles the Allegheny plateau; but many of the even uplands in the Ozark region are open prairies.

Note: This picture shows part of one of the Allegheny ridges. The folded rock-layers were once covered by many others, but they have long been exposed to the weather and have therefore wasted away.



36. The Laurentian Highland.

The St. Lawrence river flows in a valley that separates the Laurentian highland from the Appalachian.

The Laurentian highland extends from the Labrador peninsula southwest towards the Great Lakes; thence running north of these bodies of water, the highland bends to the northwest and approaches the Arctic coast not far from the west shore of Hudson bay.

Northwest of the St. Lawrence gulf and river the highland is a desolate region strewn with boulders and broken by valleys. Bare rocky hills rise in some places, but no part deserves the name of mountain range.

This region was once more mountainous than it now is, but ages ago it was worn down. It is not so rich in valuable minerals as many old deep-worn mountains are.

The northeast part of our continent has sunk partly beneath the sea, making the coast line very irregular. The St. Lawrence valley was thus partly drowned, forming a broad gulf and carrying the navigable waters far inland.

In the valleys of the low plateau are many lakes and swamps through which streams flow. Near these grow thick forests that make traveling very difficult. The people travel mostly in canoes through lakes and streams, thus avoiding the swamps and forests.

The winter winds which reach the peninsula of Labrador, from over the northern lands, are cold and piercing. The winds which blow over it from the sea are always chilly, for a cold polar current sweeps past this part of the Atlantic coast.

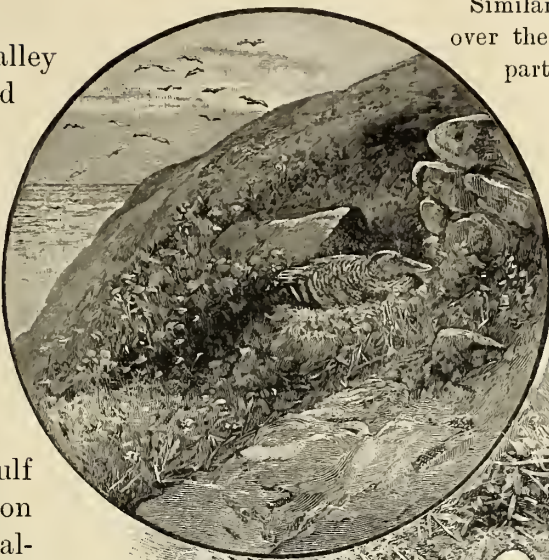
Many fur-bearing animals are found in this desolate region. Among these are beavers, foxes, martens and muskrats. Two species of large deer, the moose and the caribou, graze on mosses and tender shoots of trees in this cold country. See pictures on page 50. Ducks, geese and other sea-fowl abound along the rocky shores.

As the winters are severe, the rocky uplands rugged and the valleys swampy, the old highland is thinly settled. The few thousand Indians and still fewer white people who make their homes in that cold country live by hunting.

South and west of Hudson bay, the highland rises but little above the neighboring plains.

Far to the north and northeast of the Laurentian highland are many large islands. Ages ago these were probably part of the continent and were afterwards separated from it by the sinking of the land. The largest of these islands is Greenland. Most of it is deeply buried under a sheet of ice and snow.

The creeping ice scrapes away the rock waste beneath, and rubs the rocks round and smooth,—scratching them with stones and sand that are dragged along.



Similar rounded and scratched rocks are found all over the Laurentian highland and over the northern part of the Appalachian highland. It is therefore believed that these regions were once covered with an ice-sheet like that which now covers Greenland. Their many lake basins were made chiefly by the scraping of the ice and by the uneven heaping of the waste, or *drift*, which the ice left.

In these regions many streams were turned aside from their old valleys by barriers of drift, and were thus made to flow over rocky

ledges where we now find falls and rapids. If it had not been for this action of the ice-sheet, there would be no lakes and but few falls in countries as old as the Laurentian or the New England highland. In the southern part of the Appalachian high-

land, where ice has not worked, there are no lakes, and falls are fewer than in the New England highland. The streams have had time to deepen their channels and thus drain the ancient lakes.

Eider Duck and Nest.

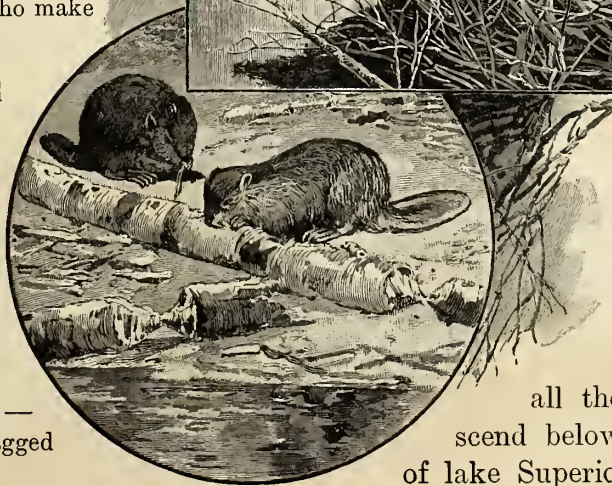
37. The St. Lawrence Basin.

The Great Lakes fill hollows on the southward slope from the Laurentian highland. These lakes and the St. Lawrence river, with all the streams flowing into them, form the St. Lawrence system.

The basins of the Great Lakes were deepened, though not wholly formed, by the rubbing or scouring of the ancient ice-sheet which moved across them from the Laurentian highland.



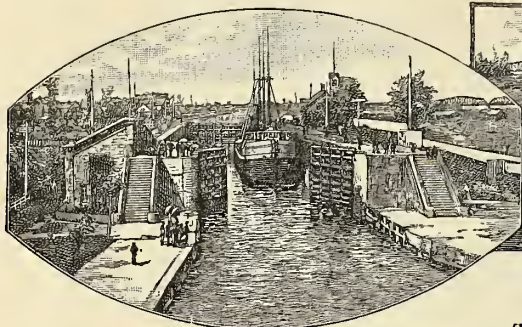
Work of Beavers.



No long slopes send large rivers to the Great Lakes. Much of their water supply comes directly from rain and snow. The bottoms of

all the lakes, except Erie, descend below sea level. The surface of lake Superior is about an eighth of a

mile higher than the mouth of the St. Lawrence. The outlet of this lake is known as St. Marys strait. It is not navigable, because it descends in rapids to the level of lake Huron.



Lock in the "Soo" Canal.

Which picture shows the rapids in this river? Vessels avoid these rapids by going through the "Soo" canal. One of the pictures shows a steamer ready to come from the canal lock.

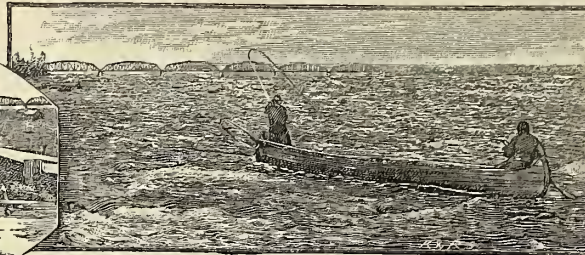
There are no rapids to prevent vessels from sailing between lakes Michigan, Huron and Erie, but between lakes Erie and Ontario there is an abrupt descent of the upland country, in a low bluff.

Niagara river, the outlet of lake Erie, originally fell over the northern edge of this upland, thus forming the falls of Niagara. Since then the river has slowly cut a deep gorge back into the bluff,—the falls always keeping at the head of the gorge. They are now about six miles back from the edge of the bluff.

The falls of Niagara are about three fourths of a mile wide and one hundred and fifty feet high. Below the falls, the river rushes through its long gorge, making rapids of great size and grandeur.



Niagara Falls.



Rapids in St. Marys Strait.

The so-called *St. Marys strait* is a river about

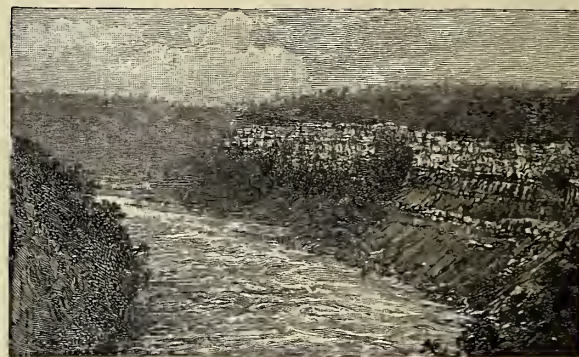
The cliffs of Niagara consist of layers of limestone on softer rock. From time to time, as the lower rock is worn away, huge masses of limestone break off and fall into the gorge. The stream must have worked thousands of years to cut this great valley, yet that time is short compared with the period during which the Hudson river was cutting its long gorge.

A large water way, known as the Welland canal, has been made to join lakes Erie and Ontario.

From lake Ontario the St. Lawrence river forms a water way to the sea. The river has rapids, but canals have been built past them. Going down the stream, many steamers pass over the rapids. The city of Montreal is below the lowest rapids, near the head of the drowned part of the valley. That city marks the limit of navigation for ocean steamers on the St. Lawrence river.

Where is lake Champlain? Into what river does its outlet flow? What mountains are west of this lake? See map, page 143.

The rocks of the Adirondack mountains and of the highland south and west of lake Superior are like those in the Laurentian highland.



Niagara Gorge.

They are roots of old worn-down mountain ranges, and the land surface which long ago was high above the mineral layers is now brought down close to them. Both these small highlands yield large quantities of iron ore. The rocks of the old region south of lake Superior contain not only the richest known deposits of iron ore, but also much copper.

The lightly-dotted line shown a little south of lake Superior on the map, page 32, marks off a district that is drained by streams of the Mississippi system, yet the district is part of the old deep-worn highland described above. A lightly-dotted line has also been placed round the Adirondack highland, yet parts of it belong to the Hudson and St. Lawrence basins.

The slopes around the upper three Great Lakes form the leading lumber district in our country. The forests yield both hard and soft woods, such as are used in making furniture and in building houses.

The St. Lawrence system is the best inland water way in the world. Hundreds of large steamers and other vessels help carry on trade between the lake ports and bear away many of the products of the mines, the farms, the forests, and the workshops.

The largest of all these ports is Chicago. This city has grown very rapidly, because it is within easy reach of

forests around the upper lakes, of farms and pasture lands in the central plain, of iron mines near lake Superior, and of coal fields in the plain on the south.

Locate Buffalo, Cleveland, Detroit and Milwaukee. These lake ports are smaller than Chicago, but they resemble it in their trade.

38. The Western Plains.

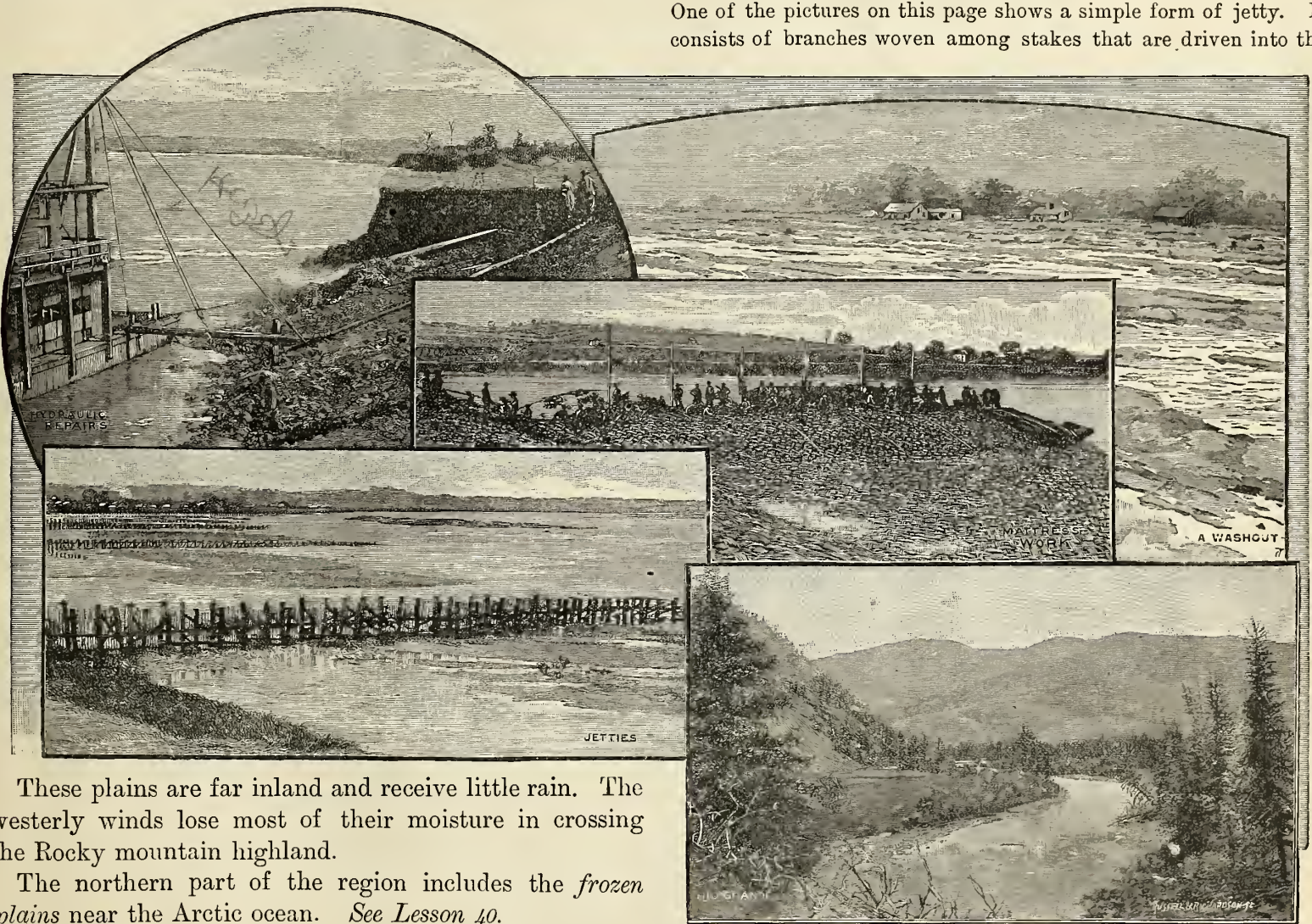
Except in the far north, the part of the great central plain lying next east of the Rocky mountains has a long gradual slope eastward.

In some places, bench lands rise high above the general level of the country.

(Describe the course of the Missouri river.) This stream from its mountain source to the gulf of Mexico is thought to be the longest on the earth. The name of the stream is often written *Missouri-Mississippi*, because the Missouri joins the Mississippi long before the latter reaches the gulf of Mexico. (Describe the course of the Arkansas river.)

Large rivers like the Missouri and the Mississippi often do much damage when flooded. They sometimes cut into their banks, — destroying fields and washing away railroads.

Jetties are built in some places to protect the river banks. One of the pictures on this page shows a simple form of jetty. It consists of branches woven among stakes that are driven into the



These plains are far inland and receive little rain. The westerly winds lose most of their moisture in crossing the Rocky mountain highland.

The northern part of the region includes the *frozen plains* near the Arctic ocean. See Lesson 40.

South of the frozen portion are the *wooded plains* in Canada. The rainfall there is not heavy, but it has time to sink into the soil, for the hot season is short and the cold ground dries slowly. Snow lies in the forests for several months each year. Large streams flow eastward from this region.

In our own country, south of the wooded plains, lie the dry *Western plains*. Parts of these plains, near the mountains, are more than a mile above sea level.

From the Rocky mountains many large rivers flow eastward across the dry plains. These streams run swiftly down their sandy valleys and carry an immense quantity of land waste. Dry upland plains stretch from one valley to another. Most of these uplands are gently rolling.

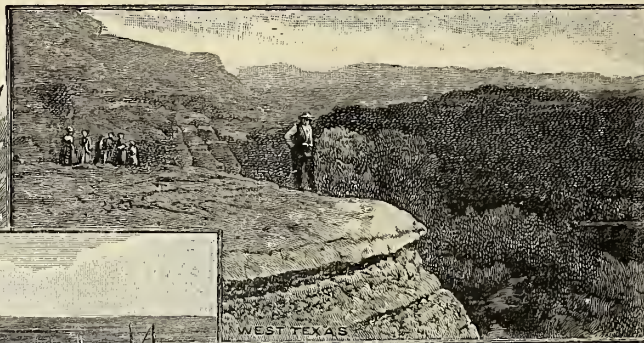
river bed. The jetties not only prevent the swift currents from striking the bank, but they also cause the muddy water to eddy into still places between them and there deposit mud or sand.

Some river banks are protected by interwoven branches, making mattress work like that shown in the picture. Powerful force pumps are first used to slope the banks. Then the mattress is made and sunk, — reaching from flood level far down upon the river bed. Swift currents cannot cut through the mattress work till it is worn out.

The dry plains are not a desert, nor are they fertile. Sagebrush thrives in many places, and scanty grass grows almost everywhere. The best lands are in the large river valleys, or near the mountains where many small streams flow. There are good farms where canals and ditches have been made to turn aside river-water over the land.

Many attempts have been made to get water from wells to irrigate the dry plains, but the supply of ground water is so small that a great part of the plains cannot be irrigated.

Large herds of cattle graze on the western plains. Kansas City, Kansas, has grown to be a leading market for these cattle, and that city supplies large quantities of beef to other parts of the country. Denver is the leading city of the plains.



The *Black hills* form a small mountain area rising out of the plains. There are valuable gold mines in the old rocks of these so-called hills.

The southern end of the dry plains is known as the *Staked plain*.¹ This is a broad smooth upland, high enough to be called a plateau.

In summer, hot southwest winds often blow from over the Staked plain. They are dry and parching. Crops west of the Mississippi river are sometimes greatly injured by these hot blasts.

What river forms part of the southern boundary of our country?

The Western plains are thinly settled, because so little of the land receives water enough to make it productive.

39. The Prairies.

The lowlands in the upper Mississippi valley consist of level or rolling grassy plains, called *prairies*. They merge into forest lands on the east and south, into dry plains on the west, and into colder plains on the north.

The chief rivers in the prairie region have cut shallow valleys in the upland through which they flow. The valleys are wider and more numerous in the southern prairies than in the northern.

Most of the rain which falls in the prairies is brought by summer winds from over the warm gulf of Mexico. The heaviest rains fall on the parts of the prairies east of the Mississippi. For some distance west of the river there is plenty of rain; but still farther west, towards the dry plains, the crops often suffer in periods of drouth.

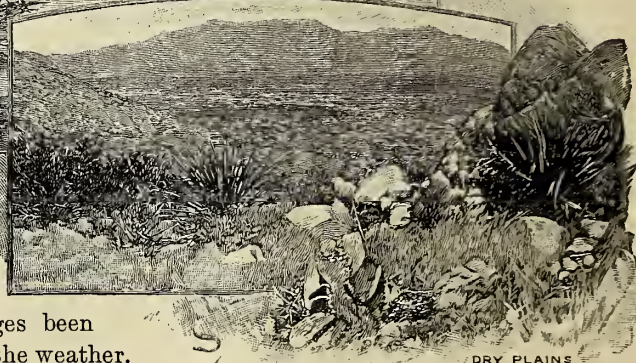
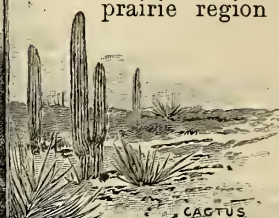
The summer rains of the prairies generally fall from thunderstorms. Great cloud-masses several miles high, moving eastward

¹ Called also *Llano Estacado*, or *Stockaded plain*.

about as fast as a railroad train, give brief rains to belts of country from fifty to two hundred miles wide, but leave dry regions on either side, until other storms come to water them.

Violent squalls usually blow out from the storms, in front of the rain. Destructive tornadoes sometimes occur beneath the storm-clouds. Houses are often blown down, and trees are uprooted.

The soil over much of the prairie region is fine, deep and rich. It has been made in various ways. In the southern part of the prairies, the surface has



for long ages been exposed to the weather.

The slopes being gentle, the soil moves away very slowly and therefore has time to form to a great depth.

The northern part of the prairie region was once covered by the great ice-sheet which moved from the Laurentian highland across the St. Lawrence valley. This ice-sheet dragged much rock waste into the prairies, spreading it out as a deep layer of soil. The waste was scraped from rocks of many kinds, and was ground and mixed under the ice. Soil of this kind is called *till*. The sheet of till has buried many old valleys and has made the northern part of the prairies smoother than it was before the ice-sheet came, and smoother than the southern parts of the prairie region now are.

A third kind of prairie soil is the sediment of shallow lakes that covered parts of the surface, after the ice-sheet had melted back. Some of the finest and richest prairie soils are of this kind.

The prairies in the valley of the Red river of the North were thus formed. These prairies lie partly within the United States and also extend northward far beyond the border of our country, into Canada.

Ages ago a great lake covered the region now known as the Red river prairies. Muddy streams flowed into the lake, and fine soil settled evenly over the bottom. When the lake was drained, the smooth bottom became a level plain. The water flowed off long ago, and yet the plain is so young that streams have hardly cut its surface. The Red river prairies form part of the Nelson river basin.



Coyote.

This region is famous for its wheat. One of the pictures below, marked *Dakota farm*, shows a part of the lake plain that is in the United States.

South of each of the Great Lakes there are belts of low hills made of rock waste dragged there by the ancient ice-sheet which crept from the snowy Laurentian highland. These hills are old moraines heaped on the surface of the country at the melting front of the ice-sheet. Many small lakes lie in hollows among the hills. Farther south, where the ice did not reach, lakes are rare.

West of lake Michigan are found a great number of drumlins, or rounded glacial hills. These were formed *under* the ice-sheet which built the hilly moraines a little farther south. Another remarkable group of drumlins occurs south of lake Ontario,¹ along the line of the Erie canal.

The prairies form one of the richest grain regions in the world. Wheat and corn are leading products. The former is hardy, but the latter is easily killed by frost; hence, the warmer prairies in

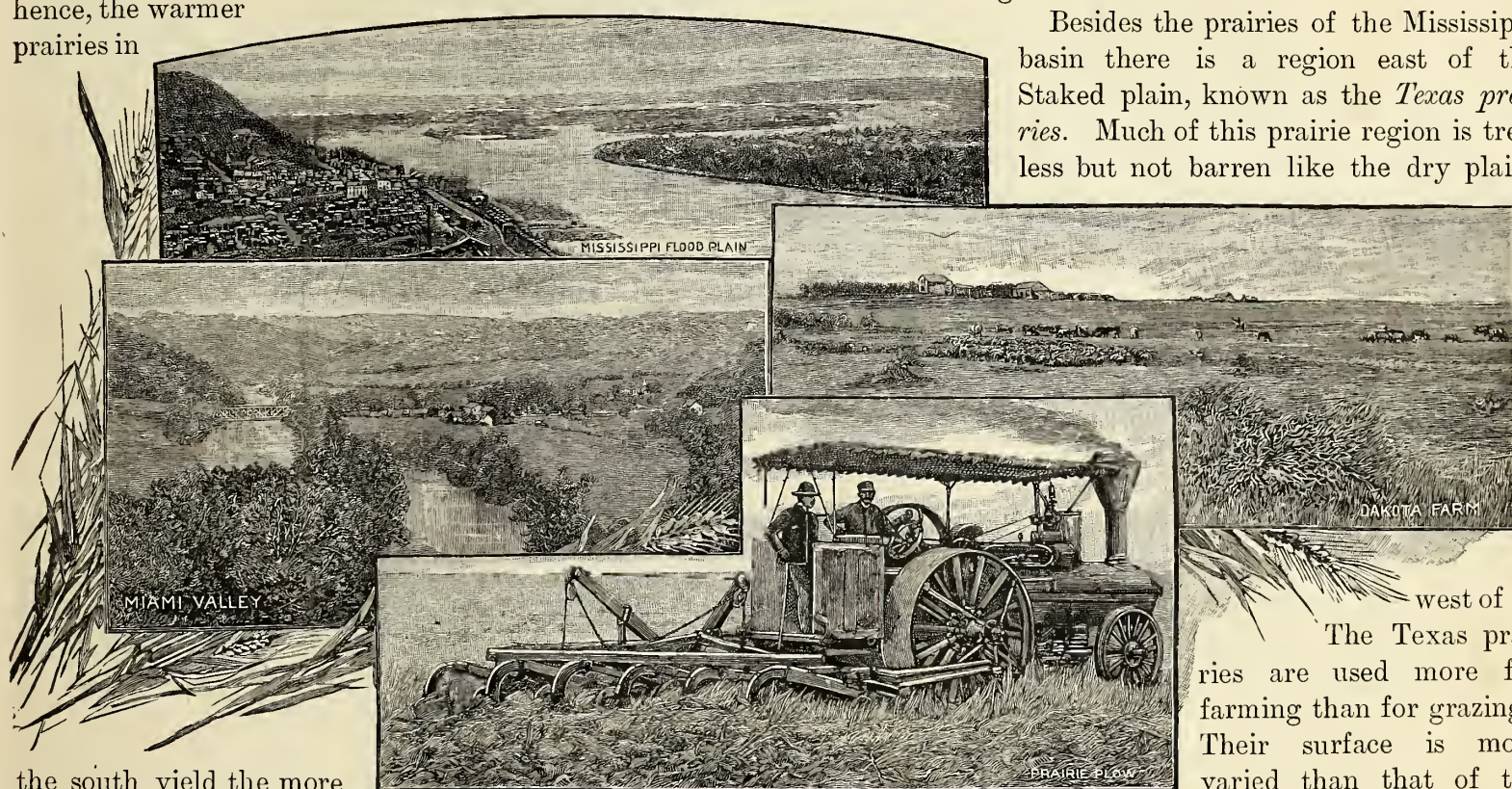
Most of the cattle and hogs in our country are raised on the prairies, where there is plenty of grass and corn. In the prairies southwest of Lake Michigan are extensive coal fields yielding immense quantities of soft coal.

Chicago has grown to be the greatest meat-packing center and grain market in the world, because the city is so near the fertile prairies, and because the railroad and steamer lines centering at Chicago reach so large a part of our country.

Minneapolis has fine water power and is near the wheat regions. This city therefore leads the world in making flour.

The great agricultural region of the middle Mississippi valley has its chief trade center at St. Louis. This city has a very large traffic by railroads on all sides and by boats down the great river.

Besides the prairies of the Mississippi basin there is a region east of the Staked plain, known as the *Texas prairies*. Much of this prairie region is treeless but not barren like the dry plains



the south yield the more corn, while those in the cooler half lead in harvests of wheat.

Few trees grow wild in the prairies, except along the streams, but many trees have been set out on the prairie farms. Most forest trees thrive best in loose and coarse soil, like that found on hills or on old mountain slopes. The prairie soil is very fine and firm, but yields readily to the plow.

Water sinks slowly into this compact soil. Heavy rains therefore swell the streams. In springtime, before the frozen soil has thawed, rains and melting snow often cause the rivers to spread far and wide over their flood plains. These floods often do much damage, but they also leave coatings of fine soil on the plains.

¹In riding between Rochester and Syracuse, south of lake Ontario, many drumlins may be seen.

west of it. The Texas prairies are used more for farming than for grazing. Their surface is more varied than that of the prairies of the upper Mississippi valley.

40. The Northern Plain.

The Northern plain of North America extends from the prairies to the Arctic coast, and lies mostly in the cold belt. The summers are short; the winters are long and severe. Near the Arctic shore, the daylight of summer is continuous for six or eight weeks. The darkness of winter lasts for an equal length of time.

In the far north the soil is frozen to a great depth. In summer it thaws for only a few inches below the surface. The region is cold and desolate nearly all the year.

Along the Arctic shore there are low and level plains, called *tundras*, from seventy to one hundred miles wide. During the short summer these plains become swampy, and are then covered with mosses and lichens, rushes and ferns, as well as with several kinds of small flowering plants, but there are no forests in the tundras.

The Mackenzie river flows from the cool belt far into the cold belt. When the spring thawing begins in the southern part of the Mackenzie basin, the water runs northward till checked by the ice which at that time clogs the channels. The streams then spread far over their flood plains, which remain covered till the ice-jams in the north melt away and allow the flood-water to run off.

Floods of this kind occur each year, not only in the Mackenzie basin, but also in every river valley whose main stream flows northward into the Arctic ocean.

Large herds of reindeer, called *caribou*, roam over the cold plain in the far north. In summer they feed on the lichens, mosses and stunted shrubs which grow along the shores of the Arctic ocean. Many thousand caribou live in the so-called *Barren Lands* west of Hudson bay. As the cold season approaches, the deer travel southward into forest regions where they can find food and shelter.

Small tribes of Indians live on the bleak Northern plains, and small bands of Eskimos are found along the shores of the Arctic ocean and Hudson bay. To these people, the deer are of great value. The flesh of the caribou is one of the chief sources of food, and the skins are used in making clothing and tents. Even the bones are shaped into simple tools and weapons.

The basin of the Nelson river is mostly in the cool belt. The southern part of that basin includes the wide fertile prairies of the Red river valley, — famous for their crops of wheat; for although the winters are very cold, the summers have long days of strong sunshine, and plants grow there very rapidly.

It is chiefly from this broad interior region that the eastern and southern parts of our country receive cold winds in winter. In that season the wide cover of snow over the interior plains becomes intensely cold. The lower air is then greatly cooled and tends to flow outward to the warmer regions.

The cold waves are especially severe when one of the whirling westerly storms moves to the Appalachian highland, and the cold winds flow rapidly southward behind it. Freezing air may then be carried even to the gulf of Mexico and to the southeast coast of our country.

The western and northern parts of the Nelson basin are thinly settled. They are forested and abound in many kinds of fur-bearing animals, such as beavers, otters and ermines.

Several large lakes extend northwestward in the basins of the Nelson and Mackenzie rivers. These bodies of water, together with the Great Lakes, form a remarkable chain stretching along the south and southwest borders of the old Laurentian highland.

41. Gulf Coastal Plain.

The broad lowland which follows the seacoast from the Rio Grande to the Hudson river¹ forms one great coastal plain. The part which borders on the gulf of Mexico slopes mainly towards the south, but the Atlantic coastal plain slopes towards the southeast. In all parts the streams flow mostly at right angles with the coast, because that is the direction of the slope which the land took when it rose from the sea.

The Gulf coastal plain is known as the *Southern plain*. The greater part of this plain is low rolling upland. It is cut into eastern and western parts by the wide flood plain of the Mississippi river.

The part near the shore is young, but farther inland the plain is older and much worn by streams that have extended their courses across it from the higher and older interior.

A large part of the Gulf coast is low, sandy and barren. The shallow waters along the shore afford few landing places for large vessels. The harbors are at the river mouths or as far upstream as the tides are felt.

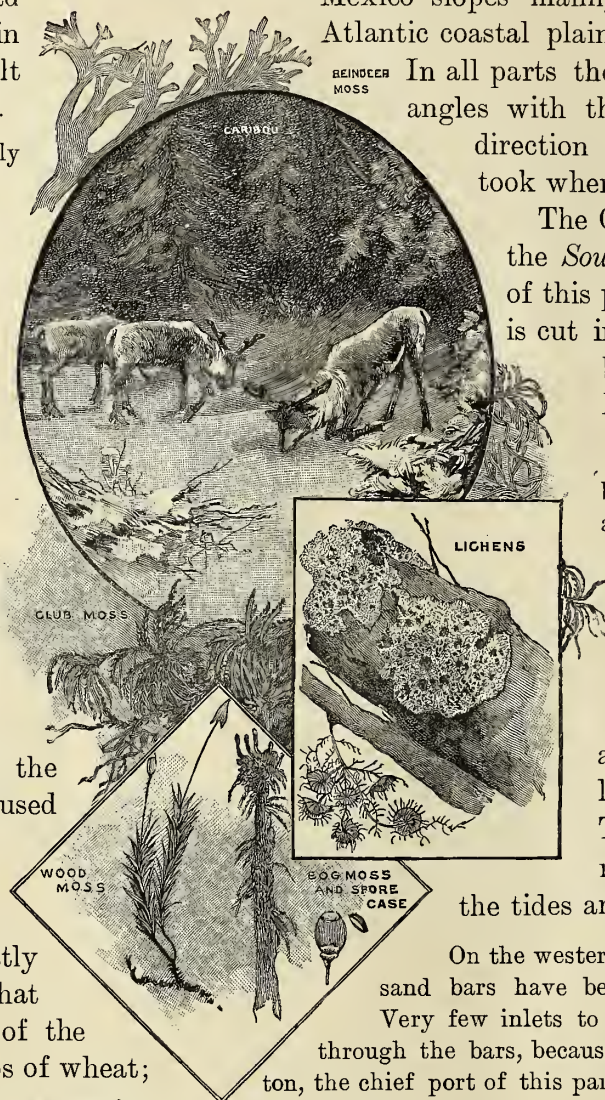
On the western side of the gulf of Mexico, long sand bars have been formed offshore by the waves. Very few inlets to the inclosed lagoons are held open through the bars, because the tides there are weak. Galveston, the chief port of this part of the coast, is built on the end of one of these sand bars.

The Southern plain is in the warm belt and receives heavy rainfall from moist winds that blow from over the gulf of Mexico. The summers are long and hot; the winters are short and mild, except in the northern portion. Near the Gulf coast, frosts are rare and snow is almost unknown.

It is from this region and from over the warm waters of the gulf of Mexico that the "hot waves" of summer are chiefly drawn to the upper Mississippi and Ohio valleys. These hot waves are southerly winds drawn inland on the front of advancing whirls in the westerly winds. The dampness of the Gulf winds makes their heat the more oppressive.

Nearly all parts of the Southern plain were at one time wooded, and forests still cover the greater portion of the region. Pine lumber is a valuable product of these forests.

¹ Long Island, Cape Cod, and the lowland east of Mexico, form narrow extensions of this great coastal plain.



Arctic Ptarmigan.

Large districts in the South have been cleared of trees and now rank among the most productive parts of our country. Cotton is the leading crop on these cleared lands.

The cotton plant needs very long and hot summers to ripen its seeds and to produce the fiber which grows around them. Cotton fiber is made into cloth, thread and rope. In a later lesson we shall learn much more about this useful plant.

Rice thrives on low flood plains and on the swampy borders of lagoons behind coastal sand bars. At times the rice fields must be flooded to make the plants grow.



Below the mouth of the Ohio river, the Mississippi has cut a broad valley in the coastal plain and has spread out a flood plain on the valley floor, from thirty to fifty miles wide. For about a thousand miles the Mississippi river winds through the great flood plain, inclosed on the east and west by low bluffs that border the coastal plain.

When heavy spring rains fall and snow melts in the north, the great river overflows parts of its lowland far and wide. In times of flood, the river deposits more silt near the main channel than farther away, and the surface of the flood plain therefore slopes gently *away from* the river.

The small rivers coming from the coastal plain into the flood plain of the Mississippi cannot keep their course up the gentle side-slopes of the flood plain to the main river, so they turn down the valley, near the bluffs. One of these rivers, the Yazoo, is shown on the relief map on page 32.

Banks of earth, called *levees*, have been built for hundreds of miles along the great river, to keep the rising water from flooding the fields. In times of heavy floods the levees are often broken; and as the flood plain slopes away from the river, the lowlands are quickly flooded. Thousands of acres of cotton, sugar cane and grain are then destroyed. A break in the levee is called a *crevasse*.

Villages on the flood plain are often built close along the river banks, where there is the least danger from floods, because the banks are the highest parts of the flood plain.

The Mississippi river meanders, or flows in long bends or loops, in the flood plain. Year after year the river wears away the necks of the loops, now and then cutting across one of them. Then the stream flows in its new channel, and the deserted part is left

filled with standing water, forming a curved lagoon. Many lagoons on the wide flood plain show former courses of the river.

For ages the Mississippi river has carried down large quantities of silt and built its flood plain far out into the gulf of Mexico, making a great delta. Every minute this broad stream carries into the gulf of Mexico enough silt to fill an ordinary schoolroom.

The low delta plain comprises thousands of square miles. Many parts are marshes and wooded swamps. Other parts are wide stretches of grass land. Many distributary streams cross the delta, and a large number of lakes lie in shallow hollows between them. Between the mouths of the distributaries are large salt bays that the river has not yet filled with silt.

New Orleans, the largest city in the South, and the only large city on the flood plain of the lower Mississippi, is situated about one hundred miles above the



mouth of the great river. This city has a large trade in cotton, sugar, rice and other products of the Southern plain. Several other cities, such as Memphis and Vicksburg, are built where the Mississippi river flows past the bluffs. These river ports are important cotton markets.

42. Atlantic Coastal Plain.¹

Southeast of the piedmont belt lies the Atlantic coastal plain. As in the Gulf coastal plain, the region near the sea is young and smooth, while the plain farther inland is older and is more deeply and widely cut by streams that flow across it from the Appalachian highland.

The widest part of the Atlantic coastal plain is south-east of the Carolina highland. Thence the plain narrows

¹ Teachers who so prefer will find no difficulty in going from this lesson directly to the later lessons on the United States, — its people, resources, commerce, etc. Most teachers, however, will doubtless continue to present the topics in the order in which they appear.

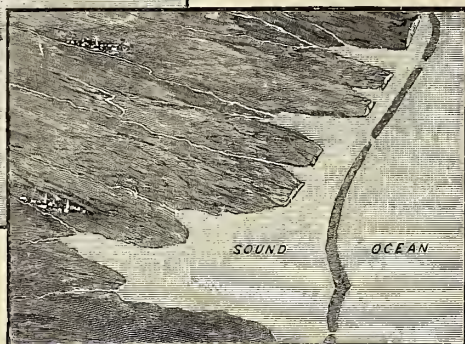
northeastward to the mouth of the Hudson river, where the piedmont belt reaches the coast.

The southern part of this coastal plain is in the warm belt and has seasons like those of the Gulf coastal plain. The northern part of the Atlantic coastal plain has the

seasons of the cool belt. Southeast winds from over



Former Coastline.



Recent Coastline showing Bars.

the warm Gulf stream help to make the winters of this coastal plain milder than those of the inland regions in the same latitude.

The long Atlantic coastal plain has plenty of rainfall. It is brought by winds from over the gulf of Mexico and the Atlantic ocean.

The higher and older part of the coastal plain, where the rivers have worn wide valleys and made fertile flood plains, is rolling or hilly. The southern half of this upland country, like the piedmont belt which adjoins it, is famous for its cotton crops. Farther north, tobacco is a leading crop of the uplands and the piedmont. The soil is also suited to the growth of grain.

In the lower and younger part of the coastal plain, where the land is flat and little worn, the rivers are sluggish.

Large parts of the younger coastal plain are covered with forests of pine. These yield turpentine, rosin and lumber. This lower part of the plain is also noted for its fruit groves, — oranges in the south and peaches in the north. Great quantities of early vegetables are raised in the younger coastal plain and are shipped mostly to the large northern cities.

When the smooth sea-bottom was lifted up to form the Atlantic coastal plain, it made a very regular coastline. Since valleys were worn in the plain, the northern and middle portions have partly sunk beneath the sea, drown-

ing the lower parts of the valleys and thus making bays with excellent harbors. Among these are New York, Delaware and Chesapeake bays. Near the heads of these bays are situated the great ports of New York, Philadelphia and Baltimore.

Several large cities are built on the rivers along the line where the piedmont belt meets the coastal plain. The rivers are there broken by falls or rapids that give fine water power. In the northern and middle parts of the coastal plain, where the valleys have been slightly drowned, the larger streams, as far as the falls, are open to vessels from the sea. Richmond, near the lower falls of the James river, is a good example of this class of cities.

In the southern part of the plain, the land slopes so gently under the sea that good harbors are found only in the river mouths. Sand bars, built by waves, lie along the coast and partly inclose many sounds. Inlets through the sand bars are kept open by tidal currents.

The best cotton in the world grows on some of these border islands and on the shores of the mainland near by. The soil is sandy, but the plants which grow in it produce long and fine fibers.

Large quantities of rice are raised in the wet lands in the warmer parts of the Atlantic coastal plain, as well as in the Gulf coastal plain. This grain thrives in lagoon swamps inside the sand bars, and in river swamps which at certain times can be flooded or drained.

Charleston and Savannah are important ports for cotton, rice and pine products. These cities are on tidal rivers and have good harbors.

The peninsula of Florida, lying between the gulf and the ocean, is chiefly a coastal plain formed by the uplifting of the sea-bottom, but partly also the work of coral polyps. Tiny creatures of this kind, in countless numbers, are still very active in building the southern portion of the peninsula farther out into the warm Gulf stream.

Southeast of Florida lie the low Bahama islands.¹ These consist mainly of huge banks of shell and coral limestone. Only small parts of the great banks rise above the sea.



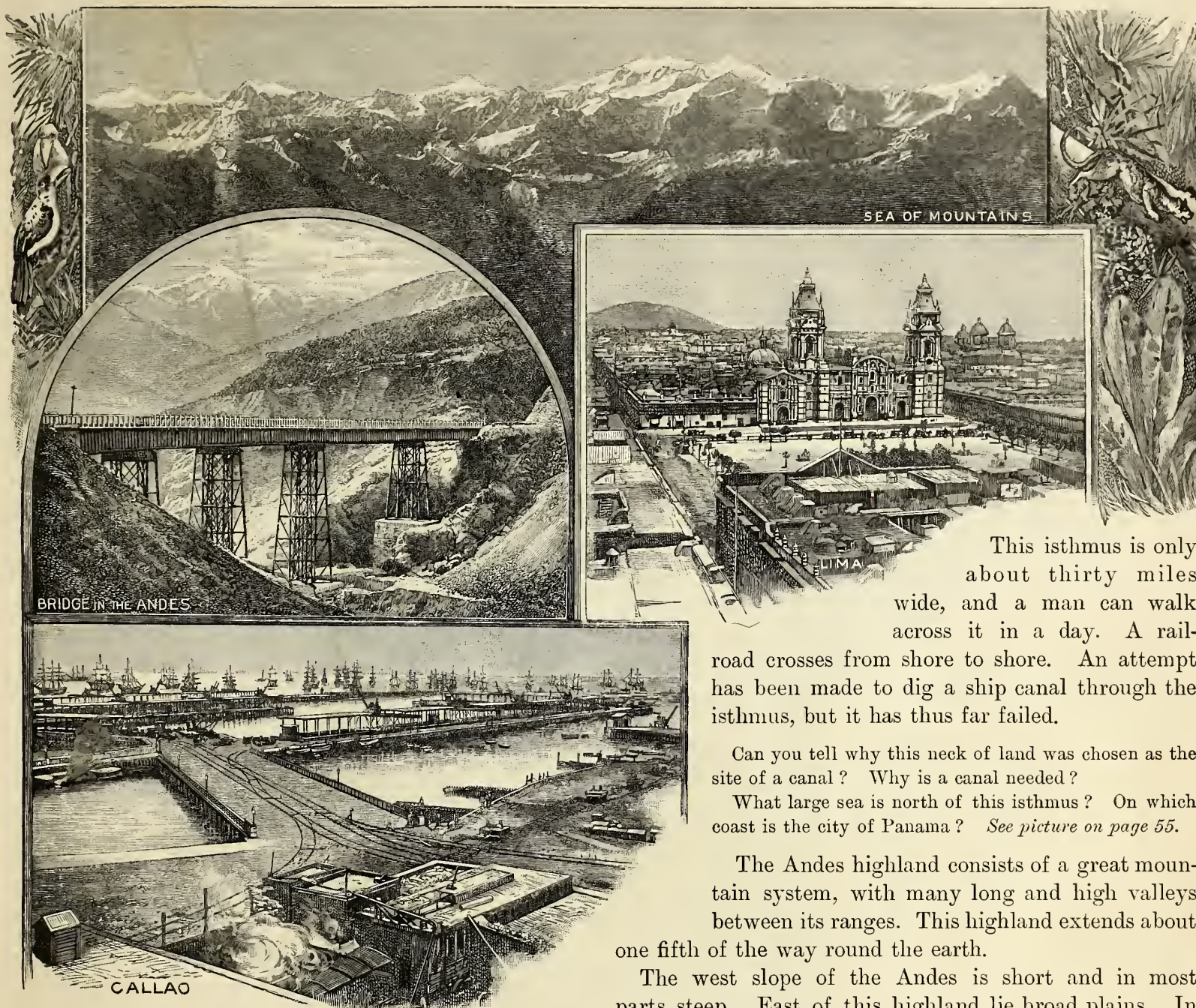
Rice Culture.

The islands of the West Indies are mostly the upper portions of mountainous country that has been partly drowned. The flooded valleys in this region form many large and deep harbors.

The city of Havana, on one of these drowned valleys, is the chief port of Cuba and the largest seaport in the West Indies.

Many of the small islands of the West Indies stretching in a chain to the northern coast of South America are almost wholly volcanic. These are known as the Lesser Antilles.

¹ Neither the Bahamas nor the West Indies are parts of the coastal plain, but owing to their position they may be briefly studied here.



SOUTH AMERICA.



43. South America.¹

South America is not so large as North America. Both these continents have the same general outline, narrowing towards the south.

The two lands resemble each other in their relief or surface forms. Each has a long western highland and also a great central plain, with lower eastern highlands.

The isthmus of Panama joins the two parts of America. Along this neck of land, the primary highland consists of a hilly ridge. Passes among the hills are only about three hundred feet above sea level.

¹ The *Map Studies* on page 55 are to precede this lesson. Refer often to the relief maps. Locate every place named in the text.

This isthmus is only about thirty miles wide, and a man can walk across it in a day. A railroad crosses from shore to shore. An attempt has been made to dig a ship canal through the isthmus, but it has thus far failed.

Can you tell why this neck of land was chosen as the site of a canal? Why is a canal needed?

What large sea is north of this isthmus? On which coast is the city of Panama? See picture on page 55.

The Andes highland consists of a great mountain system, with many long and high valleys between its ranges. This highland extends about one fifth of the way round the earth.

The west slope of the Andes is short and in most parts steep. East of this highland lie broad plains. In the valley of the Amazon are the *selvas*, or forest plains. Other parts of the plains are grass lands.

The great plains are broken on the northeast by the highland of Guiana, and on the southeast by the highland of Brazil. These are much lower than the Andes.

The north and middle parts of South America are in the trade wind belts and therefore have frequent rains wherever these winds rise over the mountains. The equatorial rain belt also shifts north and south across the northern half of the continent.

The southern part of the continent reaches far into the cool belt, in the path of the stormy westerly winds.

The warm equatorial currents of the Atlantic, moving westward under the trade winds, divide on the eastern point of South America and sweep along the northeast and southeast coasts.

South America extends far into the southern ocean and turns a great volume of cold water northward along the west coast. The winds which blow ashore from over this current are cold in the south, but become warmer towards the equator.



RELIEF MAP OF SOUTH AMERICA.



44. Map Studies.¹

In what direction is South America from North America? What Isthmus unites these continents? What oceans lie east and west of both?

On which side of the equator is the greater part of South America? Over which part of this continent does the belt of equatorial rains shift north and south? Which part is in the belt of westerly winds?

In what direction does the Andes highland extend? Which coast does it follow? Which part of the highland looks the highest? The widest?

Compare the Andes highland and the Rocky mountain highland as follows: Which is the higher? The longer? The wider? In what respects are they alike?

Where is the plateau of Bolivia? What lake is on this plateau?

Where is the highland of Brazil? Compare it with the Andes highland, in length; in width; in shape. Compare the Brazilian and Appalachian highlands in width and shape.

¹ In the *Supplement* there is a guide map for drawing and modeling. Read the note on page 29.

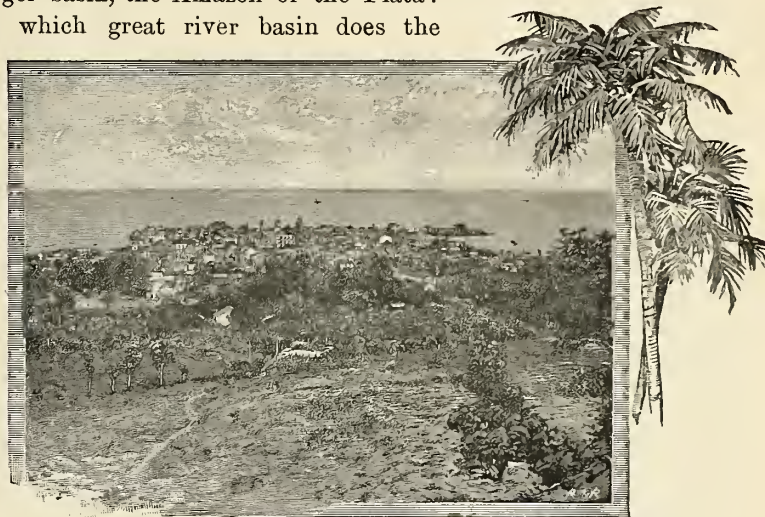
Where is the Guiana highland? Is it larger or smaller than the highland of Brazil?

On which side of the Andes is the great plain of South America? What highlands are on the northeast and the southeast?

Describe the course of the Amazon river. In which heat belt does the greater part of the Amazon basin lie?

Where is the Plata river? Which river system drains the larger basin, the Amazon or the Plata?

To which great river basin does the



City of Panama.

northwest slope of the Brazilian highland belong? The southwest slope? Which part of the central plain is drained by the Orinoco river? What highland partly separates the basin of the Orinoco from that of the Amazon?

Compare the central plains of North America and South America, as follows: What large river system drains the southern part of each? The northern part? The north-central part?

Draw the general outline of South America, — using only three straight lines. State the general direction of each coast. Which is the longest?

Sketch the Pacific coast of all America. See guide maps in the *Supplement*. Which is the more regular, the west coast of North America or that of South America?

Sketch the north coasts of both continents. Which of these coasts is the more irregular? Which is in the colder belt? Sketch the east coast of all America. Compare the two parts.

Where is the Caribbean sea? Name a river flowing northward into this sea. Where is the San (or São) Francisco river?

all of S. A. Pacific O. S.

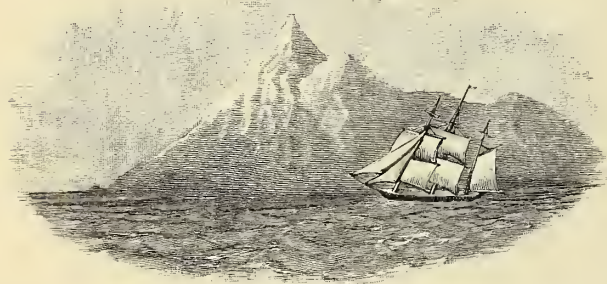


45. The Southern Andes.

The southern portion of the Andes has partly sunk beneath the sea. Many fiords now occupy deep valleys worn in the western slope. Ridges and peaks that the sea did not entirely cover form a fringe of islands.

Cape Horn is on one of these rocky islands, at a little less than two thirds of the distance from the equator to the south pole.

Near cape Horn the sea is often made very rough by the stormy westerly winds. For this reason, steamships go through the strait of Magellan, instead of rounding the cape. Small bands of Indians,



Cape Horn.

known as *Fuegians*, live on the islands south of the strait.

About halfway between cape Horn and the sharp bend in the Pacific coast, the Andes chain is very high. Some of the peaks are more than four miles above sea level and are white with snow all the year.

West of this part of the Andes lies the long and narrow plain of middle Chile. The land near the sea is rugged but not very high. The plain is between this rough coast land and the Andes.

We have learned that the belt of westerly winds moves north and south with the sun. In the cold season these winds blow nearer the equator than in the hot season.

The plain of Chile, like the valley of California, is crossed by the stormy westerly winds in winter, but in the summer season these winds move farther from the equator, beyond both these regions. The cold months therefore form the wet season. Owing to the winds from over the cold ocean current on the west, Chile has no very hot season.

The rivers which cross the plain of Chile are short. In times of heavy rain and thaw they overflow parts of the plain and deposit fine soil for the next season's crop of

wheat, barley and corn. In the hot months, when the westerly winds move away to the south, the streams are fed by snow melting on the high slopes of the Andes. A large amount of the river water is turned into canals and ditches to irrigate the grainfields and vineyards. Valparaiso is the chief port in Chile.

Below the snow line the west slope of the southern Andes is heavily wooded. Among the trees are pine and oak.

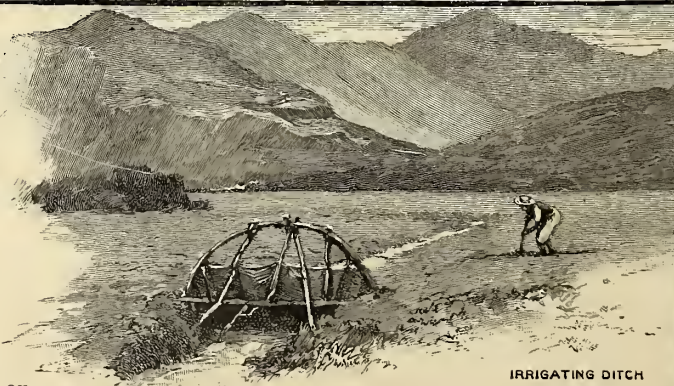
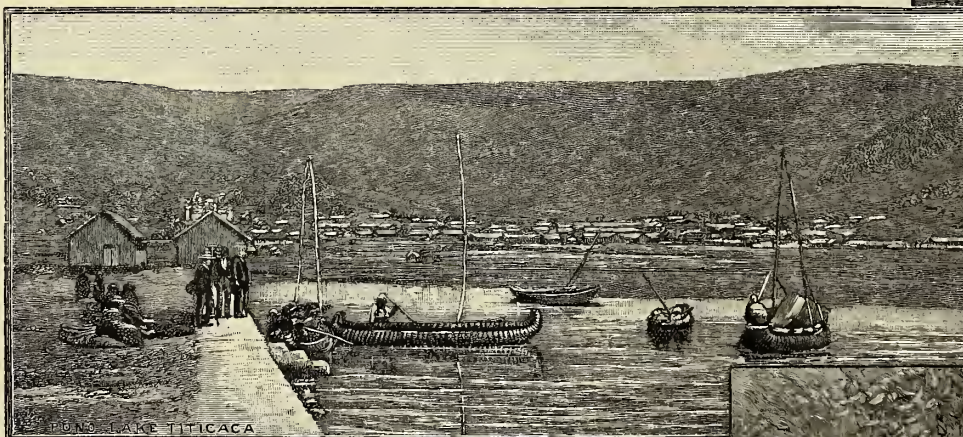
The mountain pass shown in the picture below is not far from the volcanic cone of Aconcagua. This pass is two miles and a half above sea level,—higher than many clouds. In some parts, long slopes of coarse rock waste rise on either side, and there is neither water nor fuel.

Years ago the journey across this highland was made on mules or on horses. A railroad now crosses the Chilean Andes.

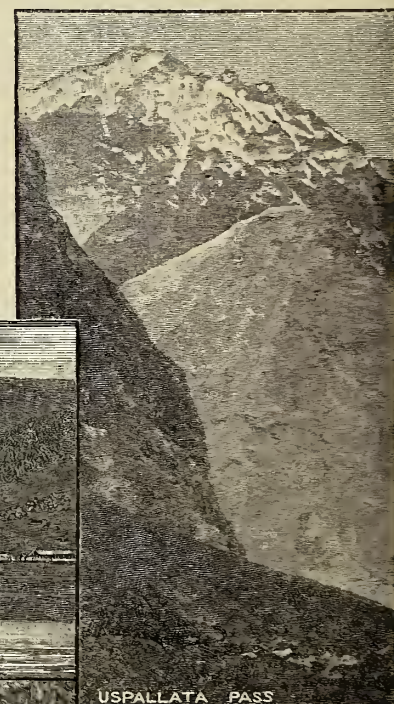
There are many volcanoes in this region, and earthquakes are frequent.

46. The Middle Andes.

The plateau of Bolivia lies in the widest part of the Andes. It is the highest plateau in America and is shut in both on the east and the west by lofty ranges. The plateau of Bolivia averages about 12,000 feet in height. It is three times as high as the Great Basin in North America.



IRRIGATING DITCH CHILE



USPALLATA PASS



A BOLIVIAN

On the plateau of Bolivia there is a large sheet of water, known as *lake Titicaca*. This lake has an outlet which carries a small portion of the water southward, but much of the water

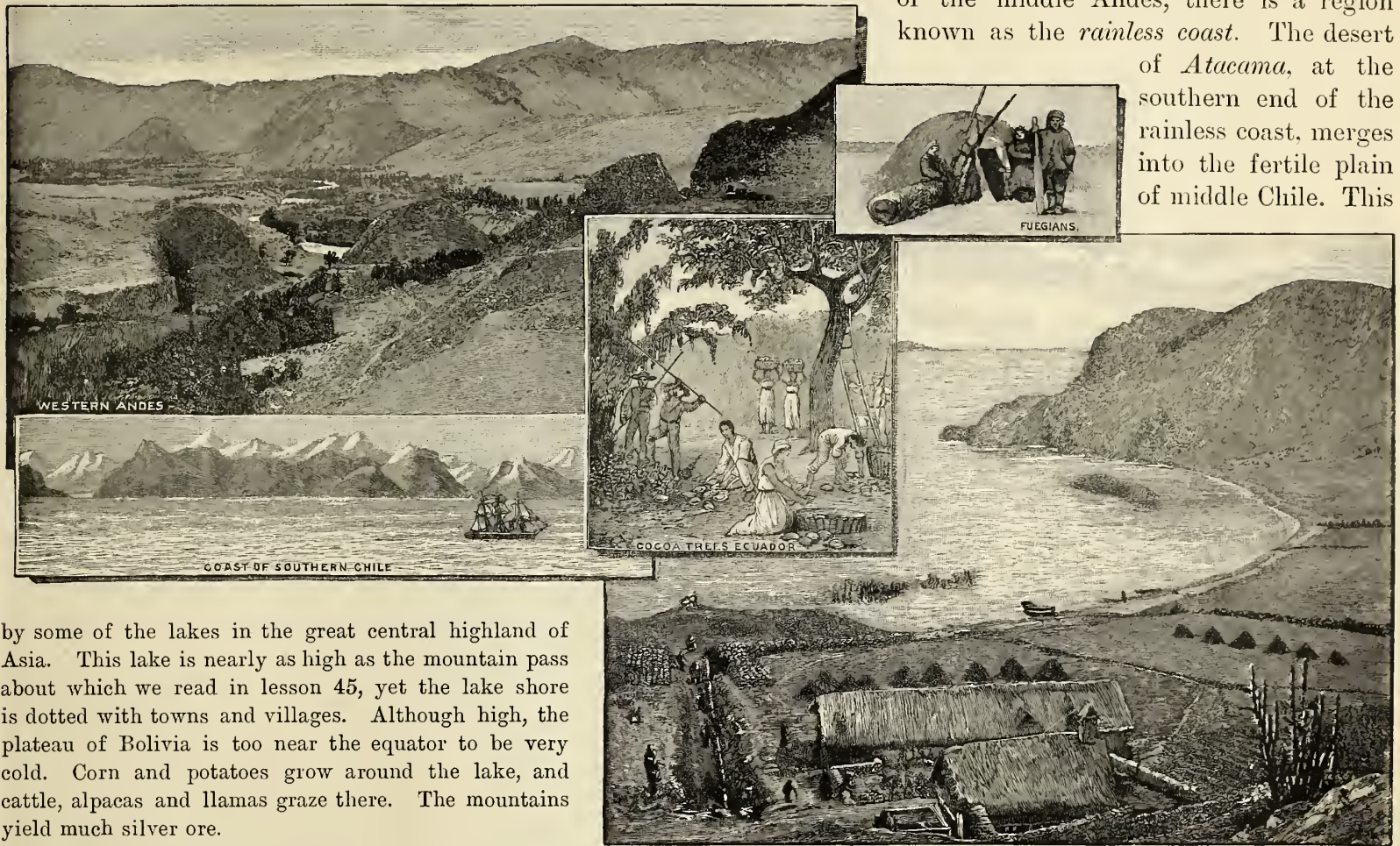
evaporates and the lake is therefore slightly brackish. The outlet does not reach the sea but flows into a salt swamp.

Lake Titicaca is in the northern part of a region having no drainage to the sea. This region extends southward into Patagonia.

Titicaca is the largest lake in South America and is the loftiest large body of water in the New World. It is only surpassed in height

Much of the bark is stripped from trees. Some of it is also taken from slender shoots that spring up from the roots of trees which have been cut down. The descendants of the Incas gather large quantities of the bark.

For more than a thousand miles along the west slope of the middle Andes, there is a region known as the *rainless coast*. The desert of *Atacama*, at the southern end of the rainless coast, merges into the fertile plain of middle Chile. This



Coal Dock, Llampopata, Lake Titicaca.

by some of the lakes in the great central highland of Asia. This lake is nearly as high as the mountain pass about which we read in lesson 45, yet the lake shore is dotted with towns and villages. Although high, the plateau of Bolivia is too near the equator to be very cold. Corn and potatoes grow around the lake, and cattle, alpacas and llamas graze there. The mountains yield much silver ore.

Steamboats navigate the lake, and a railroad leads down to the coast. The steamers and cars connect at the town of Puno which is shown in one of the pictures on the opposite page.

Northwest of Bolivia the plateau is neither so wide nor quite so high. In the Andes of Peru, the ranges on the east are separated by long and deep valleys in which many rivers flow to the lowlands. The rains of the trade winds are very heavy on this eastern mountain slope which is therefore covered with dense forests.

Many years ago a band of white men from Spain, in Europe, went into the highland of the middle Andes. They found there a race of Indians whose rulers were called *Incas*, and the same name was given to all the people who were ruled by the Incas.

The Indians had cities built of hewn stone, and their roads and bridges were better than any that the Spaniards who went there could make. Cuzco was the chief city of the Incas, and it still contains ruins of their beautiful stone work.

The Spaniards were very cruel to the Indians and made slaves of them. The descendants of the Incas still live on the highland, but white men are rulers of the whole land.

Have you ever tasted quinine, — a bitter medicine that is often used to cure fevers and colds? It is made out of the bark of cinchona trees. These grow wild in forests on the east slope of the middle Andes, and have been transplanted into other warm lands.

desert is at the northern end of the country of Chile.

Although close by the sea, the slope descending to the rainless coast is barren except in the flood plains of several small rivers. This region, like the dry west coast of Mexico, is too near the equator to feel the storms of the westerly winds and is not near enough to the equator to receive rain from the shifting equatorial rain belt.

The small rivers of the west slope are fed by rain and by snow melting on the high parts of the ranges which are reached by trade winds from over the Atlantic.

47. The Northern Andes.

In the northern part of the Andes are many high and wide valleys, walled in by mountain ranges. Some of these valleys are covered with coarse wash from the mountains and are dry and barren. Others are coated with fine soil, largely made of weathered volcanic ash. One of the most noted of these high valleys is that of Quito, a little less than two miles above sea level.

The valley of Quito is in the midst of the most noted group of volcanoes in the world. There may be seen cones so old that

their sides are deeply cut by streams, and cones smooth with recent flows of lava and showers of ashes.

Some of the volcanoes are very active. Cotopaxi, about twice as high as the plain of Quito, is the loftiest *active* volcano known. The summit of this great cone is buried in snow and is often hidden by clouds. Another famous peak is Chimborazo. This giant cone is higher than Cotopaxi but is not active.

One volcano, named *Sangay*, in this group is the most active known. It throws out a jet of lava four or five times an hour. The stream rises several hundred feet into the air. Once in a while a larger stream of molten rock is belched forth to a height of more than one third of a mile. The country is shaken, and sounds like the heaviest thunder are heard.

Many earthquakes occur in this volcanic region. For this reason most of the houses are built low and flat. They are made chiefly of sun-dried bricks. During one earthquake, about a century ago, forty thousand people are said to have been killed in Quito.

In the extreme north the Andes divide into three main ranges. The western range is not very high and it ends near the isthmus of Panama. The middle chain runs almost due north. The eastern range curves for some distance along the northern coast.

The long valleys east and west of the middle chain are drained by the Magdalena river and its branches. The Magdalena river is the chief water way in Colombia and is navigable for many miles from the sea.



Chimborazo.

Many cities and towns have been built in lofty valleys among the northern Andes. These valleys, although near the equator, are too high to be very hot.¹ The climate of the low coast region is hot and unhealthful. The coast towns serve as ports for the upland cities.

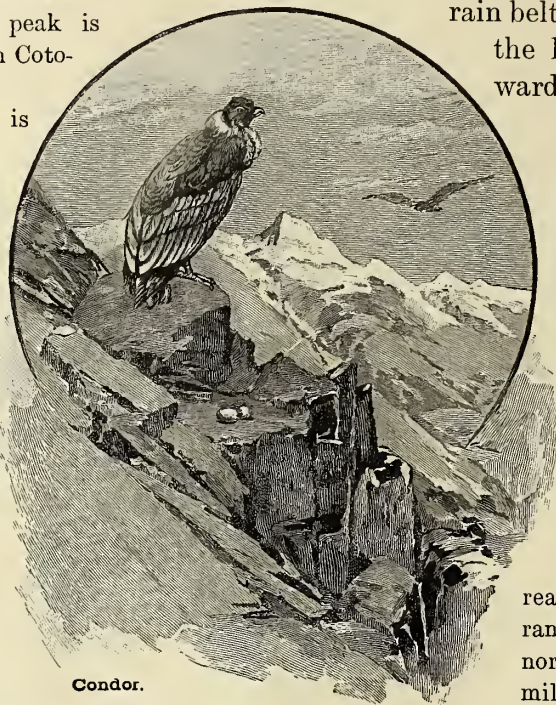
The great vulture called the condor is often seen high up among the Andes. This huge bird, the largest that flies, lays her eggs on bare crags where they are generally safe from enemies.

The condor is so strong that it often kills sheep, young llamas and other animals. For this reason, the people who live in the lofty Andean valleys are glad when one of these birds is slain.

The northern Andes are in the belt of equatorial rains. The eastern slope, which receives the rains of the trade winds, contains the sources of many large rivers. From the

¹Near the strait of Magellan the snow line is only half a mile above sea level. Towards the north the snow cap shrinks farther away from the lower level, till near the equator it is three miles high. The parts of the ranges above the snow line are dreary wastes of snow and ice.

western slope, several smaller streams flow into the Pacific. There are forests on both sides of the highland, but those on the east are much the denser, as the rainfall is there so heavy. On the western coast, the equatorial rain belt does not shift very far south, because the heat equator is there pushed northward by the cool ocean current.



Condor.

48. The Highland of Brazil.

The highland of Brazil is shaped like a triangle, with one side lying along the east coast. This coastal part is the highest. As a whole, the highland of Brazil is only about one sixth as high as that of the Andes, or about equal to the Appalachian highland.

The coast ranges of Brazil turn many river branches inland. These streams reach the sea by flowing round the ends of the ranges. Thus the San¹ Francisco river winds northward through a wide valley a thousand miles long, before it finds an opening to the sea. Other streams are turned inland by the

coast range farther south, and they reach the sea through the broad mouth of the La Plata river.

Long rivers flow northward or southward from about the middle of the highland of Brazil. This part of the highland is a plateau, not yet deeply cut by streams. Farther north and south, deep and wide valleys have been worn in the plateau, leaving long ridges between them. Rapids and falls abound in most of the streams and make them unfit for water ways.

The coast of this highland region is not broken by long bays. The best harbor is at Rio de Janeiro. It is deep and broad, and ranks among the finest in the world. Rocky reefs help to form harbors in some places along the coast of Brazil. *See picture below.*

A large part of the highland of Brazil is reached



Harbor of Pernambuco.

by the equatorial rain belt. The hot months therefore form the wet season. In the dry season, there are heavy night dews, with occasional rains from the trade winds as they rise over the highland.

¹ The English form of the Portuguese word São is San.

Towards the coast, dense forests cover large areas in this highland. In the inland region, where the rainfall is lighter than it is near the coast, there are wide grassy plains known as the *campos*. Herds of cattle graze on the campos.

Many useful plants are raised on the highland, — chiefly in the rainy eastern part. Among these are coffee, sugar cane, cotton and cassava.

Coffee is the leading product in this region. The coffee trees or shrubs thrive in lands having warm weather all the year, with plenty of rain. In Brazil they grow best on the plateau and the slopes of low ranges, at quite a distance from the sea.

Each coffee berry has two seeds. These are roasted and ground, before being used.

Rio de Janeiro is the greatest coffee market in the world.

There are two species of cassava plant, — the bitter and the sweet. From the roots of these plants many kinds of food are made by the white people, the Negroes and the Indians of Brazil.

Roots of bitter cassava contain a deadly poison, but this is driven out by grating, pressing and baking. Tapioca is made from this root. Cassava is one of the chief articles of food used by poor people in Brazil.

49. The Guiana Highland.

On the northeast the great plain of South America is broken by the Guiana highland.

This highland is for the most part a much-worn plateau, with flat-topped hills and mountains rising in high cliffs from wide valleys. One of these table mountains, near the central part of the highland, rises about a mile and a half above sea level, but most of the peaks are not half so high.

This highland is reached by the equatorial rains and therefore has its wettest season during the hot months. In all seasons, the highest portions are well watered, for the trade winds give out rain as they rise over the highland.

On the north of the Guiana highland lies a wooded coastal plain. Large swamps that extend along the shore are the home of many alligators. The slope passes so gently under the sea that at low tide wide tracts of sand and mud are laid bare.

Much of the south slope of the highland consists of rough hills and bare rocky valleys, for the winds from the sea give their rains mostly to the northern slopes.

Find on the map the Essequibo river. This stream flows from the plateau through a dense forest and is noted for its grand

cataract. The river has cut a long gorge about an eighth of a mile deep, into the head of which the water now plunges.

50. The Selvas.

The slopes east of the crest of the Andes are mainly in three great river basins. The divides between these basins cross the highlands of Brazil and Guiana, and the lowlands farther inland.

The Amazon basin is between the other two. The highest parts of its long slope are in the Andes. The lowest parts are coastal swamps, more than two thousand miles east of the snowy peaks. The side slopes descend from the highland of Brazil on the south, and that of Guiana on the north.

The Amazon basin is the largest in the world. It comprises about one third of the continent.

This basin is in the equatorial rain belt and its rainfall is very heavy. The Amazon river carries more water to the ocean than any other river in the world. Its muddy water is seen at sea for a great distance from land.

Some branches of the Amazon rise in the Andes, and the water which follows the winding banks down from these sources to the mouth flows about four thousand miles.

The nearest approach of the Amazon basin to the Pacific ocean is the source of the Paute river, in Ecuador, only about *thirty* miles east of the gulf of Guayaquil. No other river in South America, flowing to the Atlantic ocean, rises so near the Pacific coast.

The main branches of the Amazon are the Madeira river on the south and the Negro river on the north.

Large steamers go up the Amazon from the sea to the foothills of the Andes. For great distances many of the tributaries are deep, wide, and free from rapids. The length of navigable streams in the Amazon system is greater than the distance round the earth.

Part of the wide mouth of the Amazon has so strong a tidal wave, or bore, that boats cannot outride it. No towns are situated on the shore swept by this tidal wave.

This is one of the great rivers which make flood plains. For this reason the lowlands are nearly level, — sloping only a few inches to the mile. The streams there are sluggish and the silt which they carry is very fine. In the rainy season the rivers in the lowland generally rise thirty or forty feet and spread far and wide over the flood plain.

Dense forests, called *selvas*, cover the lowlands of the Amazon basin. Long vines hang from the trees, and



See page 2 for the map of Brazil.

reeds and rushes grow in the wet soil, forming a network so thick in some places that one cannot pass through without first cutting a path.

Tree ferns and palms in great variety grow in the selvas. Many beautiful birds live among the high tree tops.

Lesson 101 describes some of the large animals of the selvas and of other parts of South America. Perhaps you would like to read that lesson, but you need not study it at present.

Many small tribes of Indians live near the banks of the streams. These natives catch fish in the rivers, and animals in the forest.

Large rubber trees grow on the hot and damp banks of the Amazon. Deep cuts are made in the bark, and cups are placed



beneath them to catch the milky juice which oozes out. When heated in certain kinds of smoke, this juice dries, thickens, and forms rubber of a fine quality.

Another kind of rubber tree grows on the plateau of Brazil. The outer layer of bark is stripped off to the height of about five feet from the ground. The sap then runs out and hardens on the tree. After a few days this rubber sap is ready for market.

India rubber is made from the sap of many kinds of trees and shrubs that grow in nearly all hot and damp parts of the earth. Name some of the uses of rubber.

Rosewood trees also grow in the selvas. The color of the wood is deep red-brown, with streaks of dark resin.

Piano cases, chairs and tables are often carved in rosewood, because it takes such a fine polish. Wood that is used in making choice furniture is called *cabinet wood*. Many kinds of trees in Brazil supply cabinet wood.

Several species of trees that abound in the selvas yield dyes. Among these are logwood trees. Thin chips are cut from the trees and are kept moist. Green crystals form on the chips, and these crystals are used in dyeing cloth.

Dyes of various kinds are made from logwood. Some of these are used to give the color in blue woolen cloth, purple calico, and black prints.

Para, being near the mouth of the Amazon, has a very large trade in rubber and other products of the selvas.

51. The Gran Chaco and the Pampas.

South of the Amazon basin lies the Plata river basin. It reaches from the crest of the Andes on the west to the crest of the coast range on the east.

This basin is about one half as large as that of the Amazon. The main stream is the Paraná river which flows into the broad Plata river.

The lowland of the Plata basin is a young plain in which the rivers have cut only narrow and shallow valleys. The northern part of this plain is called the *gran chaco*, or *great hunting ground*. South of the chaco the plain takes the name of *pampas*, meaning *fields*. The pampas extend also far south of the Plata basin.

We have read about the winter rains on the plain of Chile. At that time the valley of the Plata has its dry season. In summer, when the belt of westerly winds moves southward, moist northeast winds from over the Atlantic bring the wet season to the chaco and the pampas. The interior parts of these regions are so far from the sea that their rains are not heavy.

Deep rich soil covers large portions of the Plata plain, and its grass feeds millions of cattle, sheep and horses. Much grain also is raised in this region. In some places

there are clumps of tall coarse grass covered with soft plumes. This is known as *pampas grass*.

The grassy plains merge into forest land on the north, into long plains of gravel on the south, and into salty plains and brackish marshes on the west. These marshes lie between low ranges rising from the plain.

The streams of the chaco run into the Paraná river. Many of the rivers which flow from the western highland towards the pampas dwindle away in the plain and do not reach the sea, because the rainfall is light and the water evaporates or sinks into the sandy soil.

The great gravel plains south of the pampas extend to the strait of Magellan and are known as the plains of Patagonia. These plains are not a single level stretch, but they consist of wide terraces, some of which are fully two hundred feet above the next lower on the east. These step-like plains rise from the coast towards the mountains.

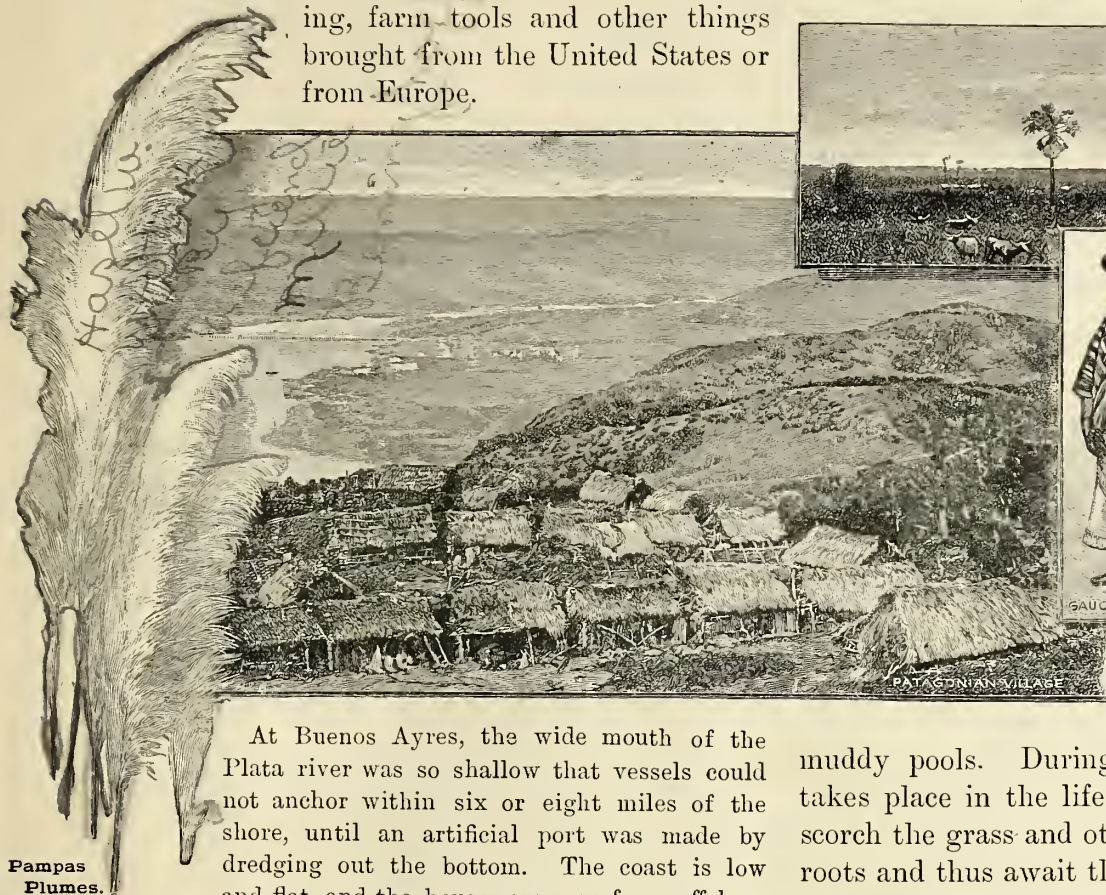
The plains of Patagonia are in the belt of westerly winds, but receive only moderate rainfall, because the western slope of the lofty range takes most of the moisture.

This region is crossed by several shallow rivers, flowing from the Andes. The flood plains of the larger rivers are fertile, but many of the streams dwindle away for want of rain.

The white people who live in the Plata basin have great farms but few factories. These people send cattle and grain to Buenos Ayres, the chief port of the country of Argentina. This city supplies the people with clothing, farm tools and other things brought from the United States or from Europe.

wide over their flood plains. Immense herds of cattle and droves of sheep feed on the rich grass which springs up all over the wet plains. The region then teems with life.

As the sun's rays become more and more slanting the



Pampas Plumes.

before the land itself appears.

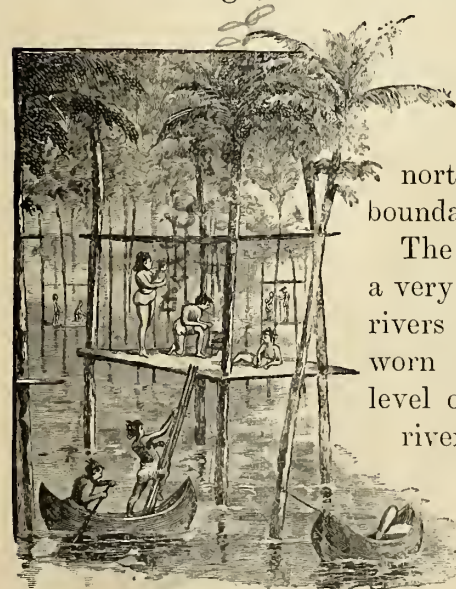
The city of Montevideo, on the northern shore of the Plata mouth east of Buenos Ayres, has a good natural harbor and has therefore grown to be the chief port of the country of Uruguay.

52. The Llanos.

The third large river basin in South America is that of the Orinoco. On the south it adjoins the basin of the Amazon. On the west and north the Andes form the boundary.

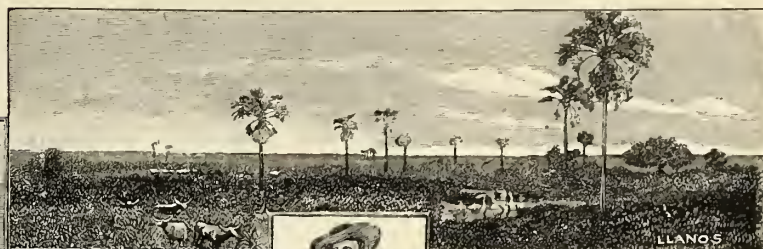
The lowland of this basin is a very young coastal plain. Its rivers flow in narrow valleys worn only a little below the level of the plain. The main river has made a large delta that is low and swampy.

The plains of the Orinoco are called the *llanos*. When the sun is north of the equator.



Tree Dwellers of the Orinoco.

they are visited by the equatorial rain belt. The rivers are then swollen by heavy rains, and spread far and



LLANOS

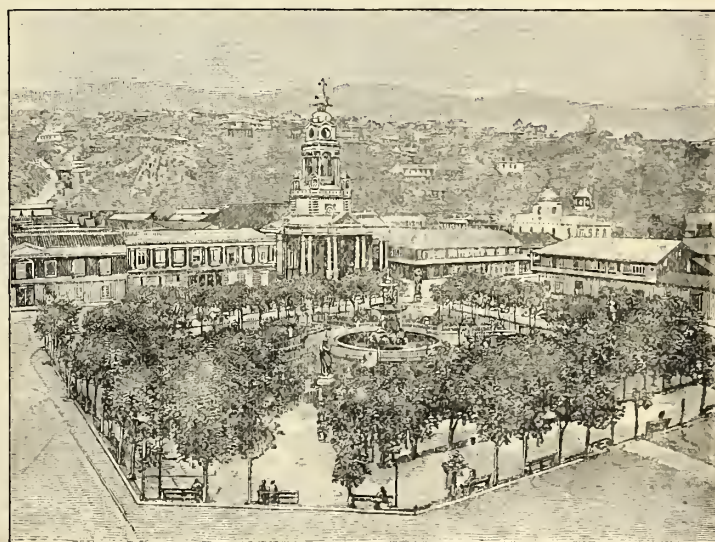


GAUCHO

rains leave the llanos and move south towards the campos. The overflow in the lowland is slowly drained off. The rivers then grow smaller and shrink away from their banks. Turtles and snakes bury themselves in the mud. The smaller

streams dry away, leaving only parched beds with here and there

muddy pools. During the dry season a great change takes place in the life on the plains. Hot trade winds scorch the grass and other plants. They die down to the roots and thus await the return of the rains. The cattle and the sheep move into the flood plains or are driven to

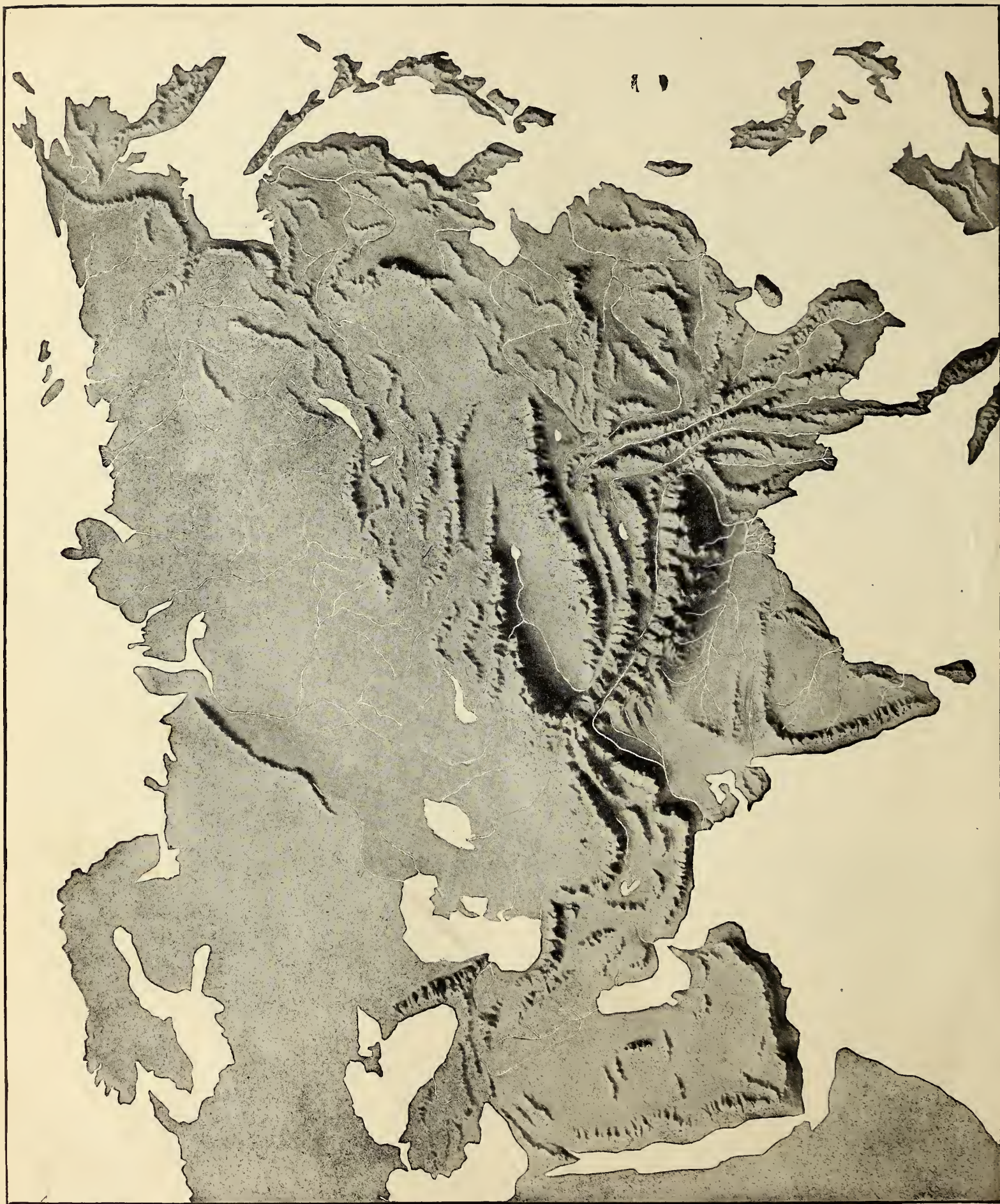


A Square in Montevideo.

the grass lands among the border foothills. The plain becomes almost a desert.

In some places it is difficult to trace the divides between the three great river basins of South America. The Orinoco river and Rio Negro tributary of the Amazon are connected by the Cassiquiari river. Tributaries of the Amazon and Paraguay rivers, navigable by canoes, are separated by only three miles of plain.

With the exception of a few rapids and the portage of three miles, a person might journey in a canoe from the delta of the Orinoco to the broad mouth of the Plata.



RELIEF MAP OF ASIA.

ASIA.

53. Map Studies.¹

Which is the larger, — North America or Asia? What strait separates these continents? Name the smallest ocean lying between them. What other oceans border on Asia?

What continents lie on the west and southwest of Asia? What name is given to Europe and Asia together?

What heat belts cross Asia? What have you learned about the season winds, or monsoons, over the Indian ocean? See page 22. Over what continent must the westerly winds blow before reaching central Asia?

¹ See drawing and modeling guide map in Supplement.



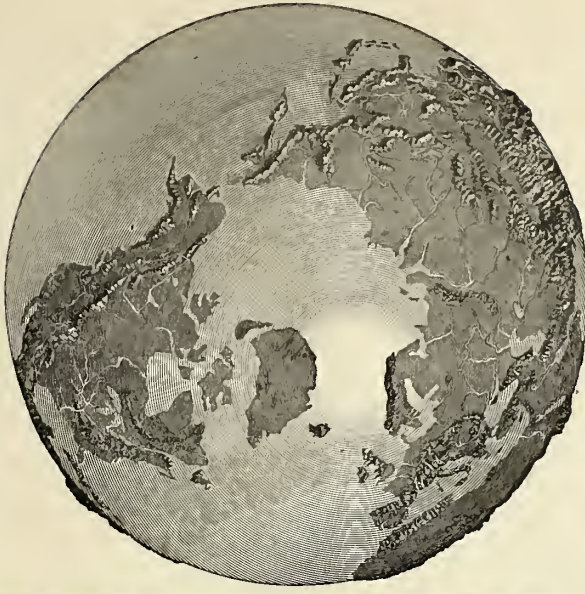
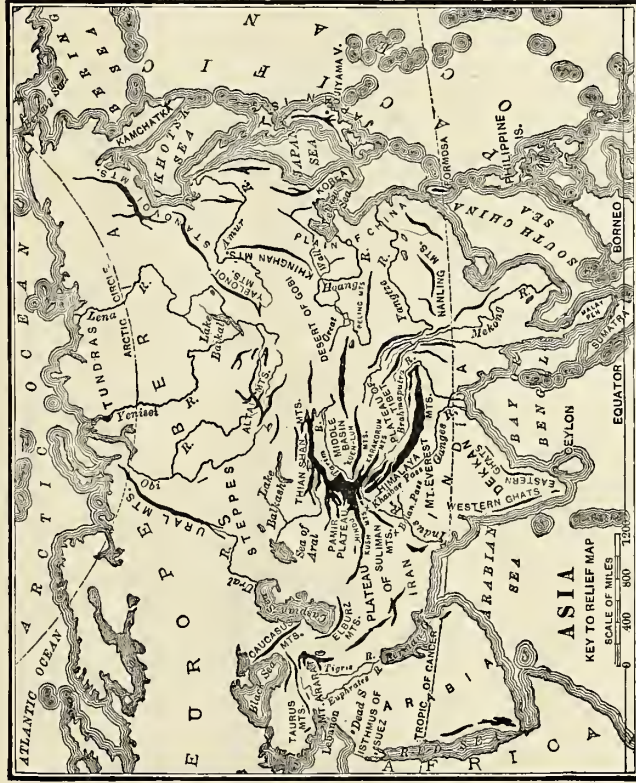
Eurasia.

54. Asia.

Asia covers about one twelfth of the earth's surface, includes nearly one third of the total land surface, and is larger than all America. This continent may be roughly divided into three parts, — wide and lofty central highlands, with broad plains on the north and narrower plains on the east and south. The great Asian highland extends northeast and southwest.

Which is the coldest coast of Asia? In what direction does the main portion of the Asian highland extend? Which part of this highland looks the highest? Compare the Asian and Rocky mountain highlands as follows: Which looks the higher? — The wider? — The longer? See globe maps.

On which side of the Asian highland is the plain of Siberia? Name three rivers which cross this plain. In what direction is the central plain of North America longest? In what direction is the northern plain of Eurasia longest? Which of these vast plains is the larger? In which heat belts does the northern plain of Eurasia lie? Into what sea does the Amur river flow? — The



The Northern Hemisphere.

The peninsulas on the south of Asia project far into the hot belt, while the Arctic coast lies wholly within the cold belt.

The central part of Asia is an interior basin at a long distance from the sea. This great basin is inclosed by lofty ranges and therefore has but little rain. The northern slope is in the path of the westerly winds but is far from the Atlantic ocean. The rainfall on that slope is therefore light. Summer monsoons yield heavy rains to the south and southeast slopes of Asia.

Yangtze river? See colored map of Asia. Name two streams that cross the plain of China.

What river runs eastward in the plain of India?

Draw the general shape of Asia, by using three or four straight lines. What is the trend of the Arctic coast? — Of the Pacific coast? — Of the Indian coast?

Sketch each of these coasts. Which is the most irregular? Which is bordered by the greatest number of islands?

What seas partly surround the peninsula of Kamchatka? — The peninsula of Korea? — The peninsula of the Dekkan? — The Arabian peninsula?

Locate the following islands: Borneo, Sumatra, Ceylon, the Philippine and the Japanese groups.

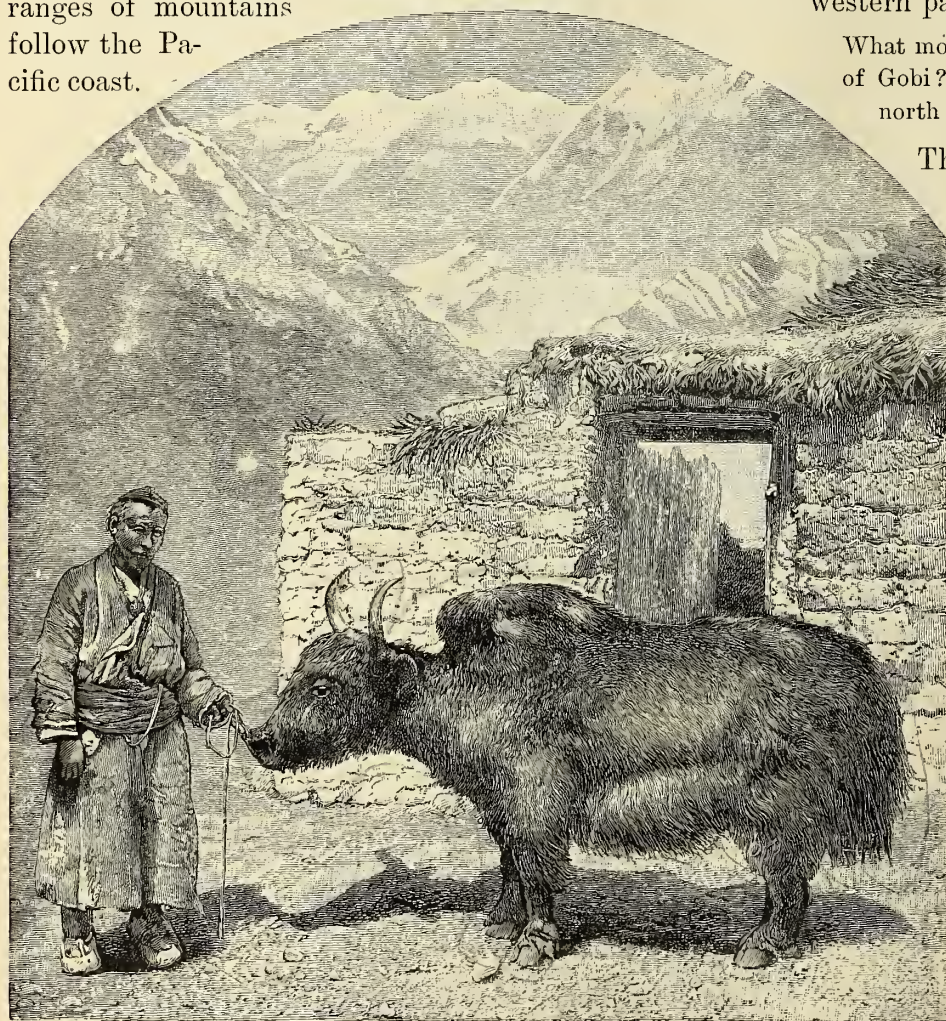
While the sun is north of the equator the broad surface of Asia becomes greatly heated. The heat is the more intense because of the dryness of the middle desert region. As soon as the air over the land becomes hot and light, the cooler and heavier air over the oceans flows in and pushes the lighter air upwards. The moist sea-winds blow landward while the hot season lasts. Summer winds moving inland from over the Arctic ocean yield but little rain to the northern slope, for they

are flowing towards warmer surfaces and can therefore hold more moisture than they bring. The heaviest rains are given to the south and southeast slopes of Asia, by the winds from over the Indian and Pacific oceans, because these damp winds are moving into cooler belts and up the high border ranges.

When the sun is south of the equator, the great central highland with its desert region becomes very cold. The cold air being heavy, then flows seaward and yields hardly any rain.

55. The Altai Highland.

From the rocky shore of Bering strait the world ridge turns to the southwest in Asia. For a long distance low ranges of mountains follow the Pacific coast.



A Tibetan and his Yak (Himalayas).

What range is near the northwest shore of the sea of Okhotsk? Where is the Yablonoi range?

The Yablonoi range runs into the Altai highland which extends inland towards the middle of the continent. The Altai plateau is about as high as the Great Basin in the United States.

The Altai highland is in the belt of the westerly winds, but their direction changes greatly with the seasons, because the air over this great continent is by turns very warm and very cold. The rainfall of this far-inland region is light. Most of the rain falls on the mountain ranges.

In what direction do most of the streams from this highland flow? What heat belt crosses it? What part of North America is in the same belt?

The Altai highland and a large part of the great plain on the north are forested with cone-bearing trees. In the broad valleys among the ranges, grain thrives and cattle find good grass land. Most of the towns in this region are built near the foot of the mountains, where the streams can be used to irrigate the land.

56. Central Basin Region.

The dry Basin region of central Asia is south and southeast of the Altai highland. The eastern part of this almost rainless basin is called the *desert of Gobi*. The western part is the *Middle Basin*.

What mountain range lies along the eastern border of the desert of Gobi? What high ranges inclose the Middle Basin on the north and the south?

The desert of Gobi is about as high as the Great Basin in our country, — 4000 feet. The Middle Basin is not quite so high.

The Basin regions of Asia and North America are alike in many respects. They are at about the same distance from the equator, — nearly half way to the north pole. Their surfaces are broken by low ranges, between which lie long troughs. None of their streams reach the sea, but all waste away or flow into salt lakes or marshes.

In both basins, the sides of the trough-like valleys are covered with coarse waste from the ranges, while the middle parts of the valleys receive the finer waste carried by the few streams. Strong winds that sweep over portions of the surface, lay bare the rocky ledges, and drift the sand into dunes. Most of the towns are built near the mountains where the streams flow out into the open valleys. These streams are fed mostly by rain or by snow melting on the high border ranges.

Less than half the region marked *Gobi* on the maps is really a barren waste. The desert runs east-and-west through the central portion, and even that is not so barren as the Middle Basin farther west.

In eastern Gobi, summer rains sometimes last for two or three days. Grass then springs up and provides food for the camels and horses in the caravans which carry tea from China to Siberia, whence it is taken to Russia. Over a large part of the so-called *desert of Gobi*, camels and sheep eke out a living on grass and bushes.

When it is noon in the Middle Basin, it is midnight in the Great Basin of North America. Can you tell why?

The western part of the Basin region of Asia is drier than the Great Basin of North America, for the former is much farther from the sea and is also inclosed by higher ranges on the windward sides.

The people in the western part of the Basin region of Asia lead a wretched life. Streams flowing at one time may be dry at another, and river valleys may thus become barren. The people are then forced to roam about in search of pastures for their cattle and sheep. The old towns are sometimes buried by drifting sand.

57. The Highland of Tibet.

South of the Basin region rises the great highland of Tibet. Large portions of its plateau¹ surface are nearly half a mile higher than lake Titicaca, and some of its peaks are twice as high above sea level as the plateau over which they rise. The highlands of Tibet and Bolivia are on almost opposite sides of the earth.

The rainfall of the inner part of the highland of Tibet is very light, owing to high ranges on its southern or windward border. Many of the valleys of Tibet are like those in the Great Basin of North America, but the former are much the higher. They are covered with waste from the inclosing ranges. Streams from the mountains run into the valleys, but there is not enough water to overflow and reach the sea. The lakes and marshes in these inclosed valleys are therefore salt.

Several of the lakes in the western part of the highland of Tibet are the highest in the world, being about 17,000 feet above sea level.

In some places, where the salt lakes or marshes dry away, the surface is covered with layers of white salt. Birds-of-passage often mistake these salty plains for bodies of water and descend to them.

The inner part of Tibet is almost a desert. Owing to its great height it is very cold, except during the days of a short summer season. The soil is poor and there are long periods of drouth. Large herds of wild yaks and musk deer search out grassy places near the streams and on the mountain sides. Few people live in the inner part of Tibet.

Three huge mountain ranges rise above the plateau of Tibet. These are the Kuenlun on the north, the Karakoram on the northwest, and the Himalaya on the south.

The word *Himalaya* means the *abode of snow*. Even in summer the snow line is about two miles below the highest summits.

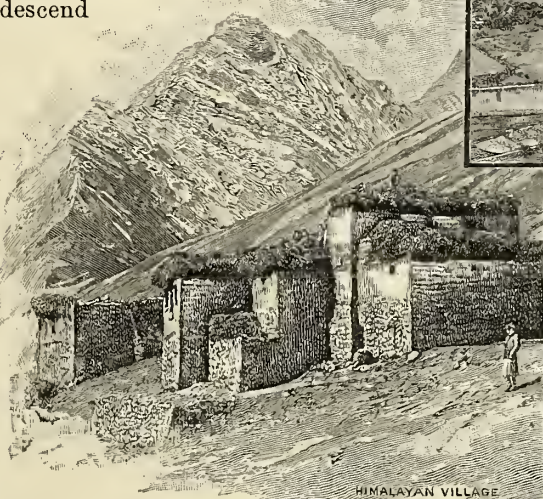
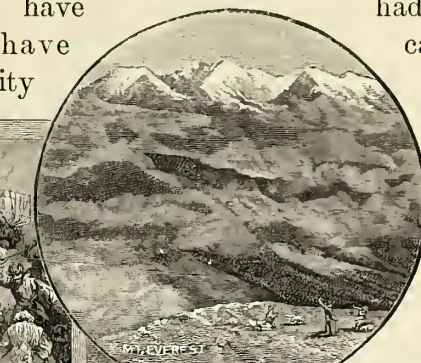
Mt. Everest is thought to be the highest peak on the earth. It rises more than five miles and a half above sea level.

The Himalayas are so lofty that they form a barrier to about one half of the air and three fourths of the moisture moving towards them. There is very little moisture in the air above the peak of Mt. Everest.

The effect of such a barrier is very marked. Few of the kinds of plants which thrive south of the Himalayas are found north of the great chain. There is but little food to be found on the lofty slopes, and not many wild animals therefore can travel from one side of the chain to the other.

The Himalaya mountains separate two races of men, — the yellow people on the north and the white people on the south. Owing to the difficulty of crossing the range, these races have neither traded nor warred to any great extent with each other.

Just north of the Himalaya chain, the valleys in the plateau of Tibet are deep, because for a long time their rivers have had outlets to the sea and have carried away a great quantity of waste from the valleys. These valleys are drained by two large rivers, the Indus and the Brahmaputra, — the one flowing



westward and the other eastward behind the range, and then escaping by deep gorges that they have cut through the mountains.

The upper parts of the Indus and Brahmaputra rivers are fed chiefly by snow melting on the lofty mountains. Along the sides of these streams are found most of the people who live in the highland of Tibet. They have small gardens and herds of yaks. To the natives of Tibet, the yaks are as useful as cattle are to us.²

Compared with the Appalachian mountains, the Himalayas are very young. Their slopes are steep and the waste is quickly washed away. Sometimes great landslides take place, — often blocking river valleys and thus forming lakes. When these suddenly break through the barriers, the water sweeps in a flood

¹ The average height of the plateau of Tibet is 14,000 or 15,000 feet.

² Lesson 102 tells some of the uses of yaks.

down the valleys, doing much damage to villages and farms. During the rainy summer seasons, mud avalanches pour down the slopes of many of these mountains. The rock waste has filled some valleys to the depth of from 500 to 1000 feet.

The southern slopes of the Himalayas face the moist monsoons from over the Indian ocean and have very heavy rainfall when the southwest trade winds of summer blow.

The Himalaya mountains are in several parallel ranges. The outer or southern ranges are the youngest. Owing to the heavy rainfall, many branches of the Ganges and Indus rivers are so strong that they have held their places and cut their valleys through the younger outer ranges which have been raised across their courses.

The work of these rivers shows how slowly the Himalaya mountains have been formed. While the ranges were being forced upward, the rivers were cutting their channels, and the mountains could not have been raised faster than the streams wore down the solid rock; for the depth of the gorges shows that the streams have held their places for ages. Many of these gorges are so narrow and steep-sided that they cannot be followed. The inner valleys of the highland are generally reached over lofty passes in the ranges.

On the east, the highland of Tibet sends long streams down the slopes of China. Several large rivers from the highland bend also to the southeast. These rivers flow in long valleys between lofty ranges which extend into the peninsulas of south-east Asia. The mountains are heavily forested.

One of the pictures on page 65 shows part of the vale of Kashmir, situated among the Himalayas not far from the place where the Indus river cuts across the chain. The level land of this vale was once the bed of a lake. The river which now meanders across the lake plain is a branch of the Indus. The part shown in the picture is about a mile above sea level, and the water must flow a thousand miles or more before it reaches the sea.

At the western end of the highland of Tibet stand the Pamir plateaus. We may think of this region as the mountain center of Asia. Almost all the loftiest ranges of the continent radiate from the Pamirs.

Eastward stretch the three huge ranges of Tibet. Towards the northeast run the Thianshan mountains along the border of the Middle Basin. The Suliman range extends southward to the coast and cuts off India from southwest Asia. The high Hindukush chain stretches westward along the northern border of the plateau of Iran.

58. Highlands of Southwest Asia.

The southwest portion of Asia is mostly a plateau region forming part of the great Asian highland.

Where is the plateau of Iran? What mountains are on the northeast? What range is on the east?



Khaibar Pass.

The plateau of Iran is about one third as high as the plateau of Tibet. The former is almost inclosed by mountains and is too far west to receive the rainy summer monsoon which blows from the southwest towards the Himalayas.

The plateau of Iran resembles the Great Basin of North America. Both have small streams, salt lakes and salt swamps. In both, the valley troughs are covered with waste from the ranges; in places, sand drifts into dunes; the people settle chiefly near the ranges, where the mountain streams can easily be used to irrigate the land; canals and ditches lead the water over the cultivated districts. As a whole, both regions are dry and unproductive.

In the Suliman range are two important passes over which caravans have gone for centuries. The Khaibar pass is one of the chief gateways between the high region of Iran and the low fertile plains south of the Himalaya mountains. This pass is only about half a mile above sea level. *See map on page 63.*

Another low place in the crest of the Suliman range is the famous Bolan pass, southwest of the Khaibar. This pass has been the scene of many fierce conflicts between caravan guards and the natives of the mountain region. In recent years the native tribes have been subdued.

Persia occupies the greater part of the plateau of Iran and extends from the Caspian sea to the Arabian sea.

On the plateau of Iran is a region known as the *Persian salt desert*. This covers a large area and consists of solid salt several feet thick in most places. In some parts it is of unknown depth. Centuries must have passed while the water which has now evaporated was depositing this great bed of salt.

What gulf is on the southwest of Persia? What country is west of Persia? *See colored map of Asia.*

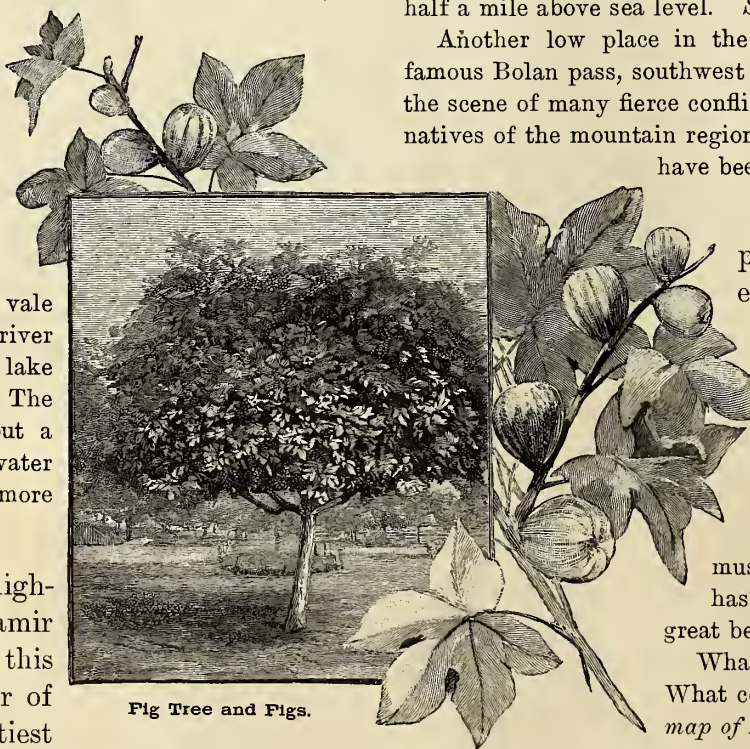


Fig Tree and Figs.

Southwest of the plateau of Iran lies a small river valley sloping to the Persian gulf. The greater part of this valley consists of the flood plains of two rivers, — the Tigris and the Euphrates. Canals have been made to lead water over the plains, and some parts of them are very productive. Wheat is the leading crop. Figs and dates also thrive here.

For many centuries this valley has been peopled by the white race. Under strong rulers, the people thrived and made fine systems of canals to irrigate the land. Then the crops were large, great cities were built, and the nation became prosperous.

For a long time the rulers have been weak. The land has been overrun by thieving tribes that have not only robbed the tillers of the soil, but have also destroyed many of their canals. Fearing these robbers and also having heavy taxes to pay to their cruel rulers, the people have allowed the remaining canals to go to ruin. Many parts of the valley that were once fertile have become sandy and barren.

The Persian gulf is the shallowest of five arms of the sea that almost surround the portion of Asia extending westward from the plateau of Iran. Name the other four seas.

A low plateau spreads out towards these seas. Its average height is about one half that of the Great Basin in our country. A large portion of the region is desert, but there are also many grassy slopes and fruit groves. The land is poorly tilled.

Between what seas does the Caucasus mountain range extend?

There are many old lake basins in the region south of the Black sea. These contain small lakes, most of which have no outlets, for there is not now enough rainfall to supply more water than evaporates. Several small rivers flow down the north slope of the plateau. Mt. Ararat, in this plateau region, is a famous volcanic cone a little more than three miles and a fourth high.

Many small but fertile slopes descend from western Asia to the Mediterranean coast. They receive light rainfall from the westerly winds. Figs, olives and grapes in large quantities are raised in that district.

The *Dead sea* is in one of the most famous valleys on the earth. The water of this sea is about ten times as salt as that in the ocean and is also very bitter. The sea is not quite fifty miles long. Its surface is about one fourth of a mile below the level of the ocean.

Steep slopes descend to the east and west shores of this inland sea, but a wide marsh spreads round its southern end. The wet land is thickly covered with bushes and coarse grasses. At the northern end of the Dead sea lie wide mud-plains across which the river Jordan flows to enter the sea.

North of the Dead sea is a beautiful lake known as the *sea of Galilee*. This lake also is below sea level, but its water is fresh, because the river Jordan forms its outlet. This river also feeds it.

The Jordan and the two lakes are in one long valley. It is shut in by high land on both sides. One low range near the southwest shore of the Dead sea contains a deposit of rock salt about six miles in length.

The slopes of the Dead sea valley are mostly barren. Rain seldom falls in this region, except on the mountains. All summer the hot sunshine pours down upon bare and rocky slopes.

The peninsula of Arabia is mostly a desert plateau. In many respects it resembles the Great Basin but is much drier. Dates and wheat are raised in some of the narrow valleys near mountain ranges. Camels and horses also graze there.

Some of these valleys not far from the sea are thickly settled. Until recent years the chiefs have kept travelers out of this part of the country. Many of the chiefs have great wealth and fine buildings.

The hilly slopes near the southern end of the Red sea are famous for their coffee crops.

59. The Arctic and Caspian Slopes.

The northern part of Eurasia consists mainly of a broad low coastal plain. The Ural mountains run north and south across the plain and form a portion of the boundary between Asia and Europe. The Arctic lowland in Asia is known as the *plain of Siberia*. Nearly all of this plain is in the basins of three large river systems.

Name three rivers flowing across the plain of Siberia. Where do they rise? Which of these rivers, through one of its branches, receives the overflow of lake Baikal?

This lake is about one fourth of a mile above sea level and is almost encircled by forested mountain slopes.

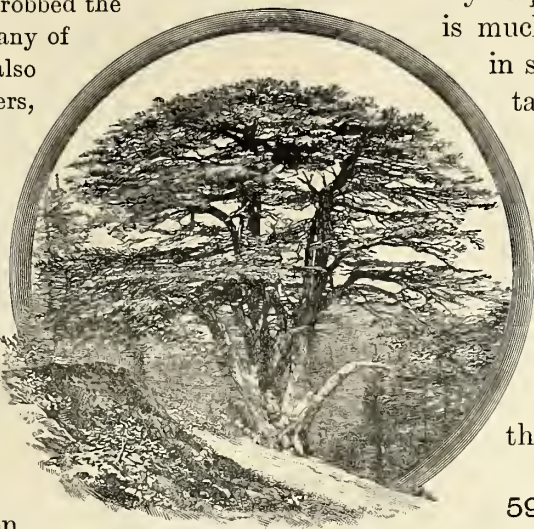
Lake Baikal is the largest body of fresh water in Asia, but it is not quite half so large as lake Superior. The water of this lake is very deep, and it abounds in salmon. In summer many seals are caught along its shores. It is curious to find seals in this lake, for they are usually seen only in the oceans.

Russian traders navigate the lake while it is open, and when it freezes they cross it on sledges. It is a useful highway of trade.

A large part of the plain of Siberia lies within the Arctic circle. For two months or more in winter, the greater portion of the Arctic coast of this plain is in darkness. The longest period of summer daylight lasts for an equal length of time. South of

the Arctic circle, in all parts of the Siberian lowland, the summer days are long and the winter days are short.

Being far from the equator and far inland from the warmer oceans, the plain of Siberia has long and very cold



Cedar of Lebanon.



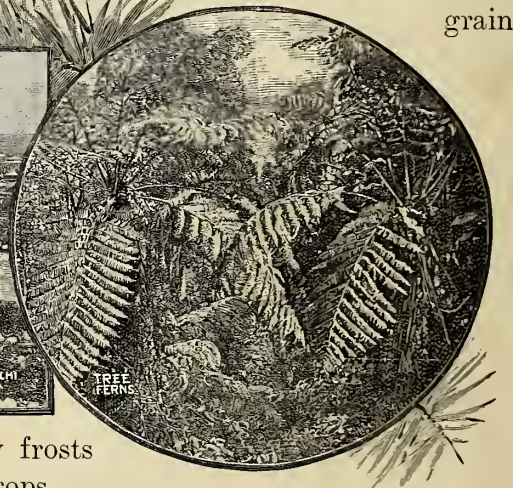
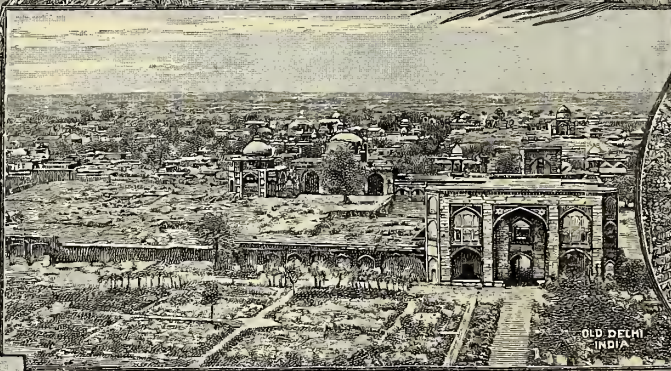
winters. The summers are short. They are cool in the northern part of the plain, but warm in the southern part.

The map of the heat belts, page 23, shows how far south the cold belt extends in Siberia. There, in the lower part of the Lena basin, is the coldest winter region known in the world. The ground is frozen to the depth of several hundred feet, and even in summer the soil thaws for only a few feet below the surface. The extreme cold is due to the fact that the region is far inland from the warmer oceans, that the winter nights are long, and that warm winds from the far south cannot cross the great central highland.

The average temperature in the coldest part of Siberia is only a few degrees above zero. The winter average is more than 50° below zero; and 90° below have been recorded.¹

Along the Arctic coast of Siberia are mossy marshy plains called *tundras*. They resemble the marshy plains along the Arctic coast of North America. Heavy floods,

like those
in the



Mackenzie valley, occur in the tundras and for a long distance south of them.

What causes these floods? See lesson 40.

In the gravelly river banks of the Siberian tundras, fossil elephants are found. These had woolly coverings that fitted them to live in the cold plains. The "woolly elephants" are unlike any now found on the earth; yet the flesh of these great beasts, after being buried perhaps for many centuries in the frozen ground, is sometimes found well-preserved and is eaten by dogs.

The tusks of these fossil woolly elephants have for a long time supplied part of the ivory so finely carved in China and Japan.

In summer large herds of reindeer visit the tundras to feed on reindeer moss. As the cold season advances, the deer go southward to places where they can find food and daylight. White bears and seals are seen along the Arctic shore, but both the plant and the animal life are scanty. The region is dreary and desolate, except for a few weeks in summer.

¹ At the trading station of Verkoyansk, 350 feet above sea level. See map of Asia in the Supplement.

South of the tundras, as in North America, lie the forest plains. Most of the trees are cone-bearers, — larch, fir and pine. The forest belt crosses northern Eurasia, from the Pacific ocean to the Atlantic. In Asia the forests extend southward to the border of the desert of Gobi, the Middle Basin and the dry plains around the Caspian sea.

In the Ob basin, east of the Ural mountains, the growth of trees is very dense. There the forested swamps cover many thousand square miles.

Like the rest of the forest belt, the Ob swamps abound in fur-bearing animals. Among these are squirrels, sables, bears, and reindeer. Hunters in the Ob swamps must use great care, for large areas consist merely of thickly-woven roots and grasses floating on water. A false step may cost a life.

The forest belt is broken in many places by wide open plains. In the warmer parts of the Siberian river basins, the plains yield harvests of wheat, rye and oats. Even in places where only about three feet of loose soil overlies deeply-frozen subsoil and rock, some grain

is raised, but early frosts often destroy the crops.

A railroad is being built from west to east across the plain of Siberia, but at present the great rivers form the main highways of trade and travel. Turn to the relief map on page 62, and you will see that the Ob, Yenisei and Lena rivers branch towards one another in such a manner that, except in two narrow places, there is a water way from the Ural mountains to the Stanovoi range.

In summer many steamers navigate the rivers, and in winter the smoothly-frozen surfaces of the streams make excellent roads. The winter travel is mainly on sledges drawn by deer.

The natives of the Siberian plain belong to the yellow race. Many white people from the great plain in Europe have settled in Siberia, and these now greatly outnumber the natives.

Along the southern border of the forest belt, the open plains, or *steppes*, are covered with fine fertile soil. Large crops of grain are raised, and many cattle, sheep and horses graze on the plains.

The southwest part of the northern plain of Asia is drained towards the Caspian and Aral seas. As the region is low and far inland, it has only light rainfall and is therefore almost treeless. The rain comes in summer when the sea-winds blow over the heated plains. In winter the heavy air tends to flow outward from this region.

The grass in any one part of this region is not plentiful enough to support the cattle and sheep. The people therefore wander with their herds from place to place, living in tents and carrying all their possessions with them. Such wandering people are called *nomads*.

East of the Caspian sea, the plain is desert-like and barren, except where streams from the mountains are led aside in canals to irrigate the land.

The surface of the Caspian sea is lower than the level of the ocean, but the surface of the Aral sea is higher. Both these seas are salt.

The Caspian sea is more than four times as large as lake Superior. The southern end of this sea, near the mountainous coast, is very deep.

Thousands of people earn their living by catching fish in this great salt lake or in the rivers which flow into it. Many steamers and sailing vessels are engaged in carrying freight between the Caspian ports.

The Caspian and Aral seas were once much wider than at present, — probably at the time when a great lake stood in our Basin region. The Aral sea then had an outlet leading to the Caspian. As the climate became drier and the seas shrunk away, the margins of their shallow bottoms formed salty plains. These plains now spread in a wide belt around the seas but yield only coarse grasses.

60. The Pacific Slope.

From Bering strait to the Amur basin, the east slope of Asia is very narrow and therefore has no large streams.

The Amur river is the natural highway from the Altai plateau to the Pacific coast. The basin of this stream is so far from the equator that the winters are long and severe. The region is thinly settled and is largely overgrown with forests.

Name two rivers that flow across the plain of China. Where do these rivers rise? What mountain range divides the middle parts of their basins? Where is the Nanling range?

Which heat belt crosses the basin of the Hoangho or Yellow river? In which belt is the greater part of the Yangtze river basin?

The southeast slopes of Asia, including the basins of the Yellow and Yangtze rivers, are watered partly by rains from the summer monsoon and partly from winter storms. The summer rains are much the more abundant.

The great delta plain of China is made of soil carried down by the Yellow and Yangtze rivers, — mostly by the former. This delta plain contains many thousand square

miles and is one of the most thickly settled regions in the world.

Above the delta plain, the Yellow river flows through a district covered with deep yellowish soil. This was brought as dust by the



Loess Beds, Yellow River Basin, China.

winds from the dry inland Basin region. The area covered by this soil is far greater than that of the lava plains of the Columbia plateau region.

In some places the yellowish soil, called *loess*, is hundreds of feet in depth. It fills valleys, buries hills and rises far up the slopes of mountain ranges. Rivers have cut deep valleys in it, and in the sides of the valleys, at points which the streams no longer reach, millions of Chinese people have dug caves for homes. This soil is very fertile, and gardens cover a large part of the region.

The Yellow river has carried down countless tons of the yellowish soil and has made of it the larger part of the great delta plain of China. Each year the plain grows farther into the sea, for no ocean current strong enough to carry away the silt sweeps past the mouth of the river. Cities in China that were once seaports are now far inland.

The delta plain of the Yellow river, like every other delta plain, slopes gently away on both sides from the muddy river which brings down the soil. Banks have been built along the river to keep it in its proper channel. Several times the water has burst through the banks and rushed in floods over the plain. Cities and towns have been swept away, and many thousand people have been drowned. The Chinese call the river *China's sorrow*, on account of the destruction and suffering it has caused.

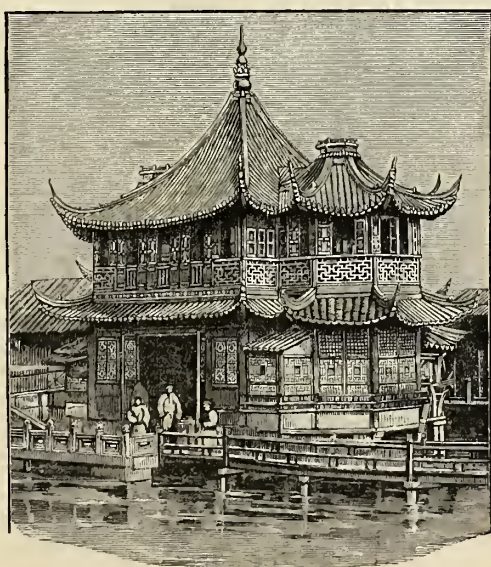
Each overflow of the Yellow river has given it a new course across the fertile plain and a new mouth about which to deposit sediment and thus build its delta forward. In the course of centuries, the river has shifted its mouth three hundred miles back and forth along the coast.

The Yellow river takes its name from the yellowish soil which discolors the water. This river performs its chief work in making delta lands, for it is of little use to steamers entering from the sea. The current in some places is very swift, and numerous bars form, not only at the mouth of the river, but also far upstream.

As the river has changed its course, and as it is hardly navigable, only a few large cities have grown up along its banks.

The Yangtze river has built the southern part of the great delta plain of China. This stream forms the best water way on the eastern slope of Asia, and is open to large steamers for more than a thousand miles from the ocean. Many of the greatest cities in China have grown up on the banks of the Yangtze river.

Above the delta plain, for a long distance inland, the basins of the Yellow and Yangtze rivers are rolling or



Chinese Tea House.

hilly. The western portions of the great basins are in the mountainous regions of Tibet.

The leading exports from China are tea and silk. Rice and a grain called *millet* are among the chief food products.

The tea plant is hardy, but it grows best in a hot, moist and even climate. It needs a great deal of rain, yet the plant dies if placed in swampy land.

Several times a year, crops of leaves are picked for curing. Care

is taken to nip off the leaves without injuring the buds which grow where the leaves join the branches. The youngest and earliest leaves are the most delicate and give the best-flavored tea.

The green leaves which are to be cured and sold as black tea are first spread on trays to dry. The leaves are then roasted for a few minutes and afterwards rolled between the hands to

press out the juices. As the leaves dry, they turn black and are then ready for use.

The green and the black teas are made from the same kind of leaves, but for green tea the process of drying is completed as rapidly as possible after picking. About four pounds of fresh leaves are needed for each pound of tea.

Silk is made of fibers spun by silkworms. These little creatures feed on the leaves of mulberry trees.

Each worm makes a silken case, or *cocoon*, by spinning fine long threads and winding them around its body. Some of the cocoons contain more than two miles of silky fiber, and yet they are only about as large as robins' eggs.

The cocoons are put into hot water to kill the silkworms; otherwise they would gnaw their way out, spoil the cocoons and fly away as moths. The fiber is unwound from the cocoons and is made into thread or cloth.

Southeast Asia and the adjacent islands are famous for their fine silks.

Hongkong and Shanghai have a large trade in tea and silks.

Canals extend almost the whole width of the great delta plain of China and form fine water ways. They supply water also for large tracts of land on which rice and other products are raised. A large inland trade is carried on by way of these canals and rivers.

More than two thousand years ago, a high and wide wall was built along the former boundary of China, to shut out fierce Tartar tribes on the north. The wall runs for more than a thousand miles over mountains and through wide valleys. Many parts of the great wall are now crumbling to ruins.

China contains about one fourth of the people in the world. The Chinese belong to the yellow race.

From the Tibetan highland mountain ranges extend into the great peninsula of southeast Asia. Swift

streams flow in the valleys between these ranges. The longest of the streams is the Mekong river.

The course of the Mekong is in many places broken by rapids. The river is therefore not open to navigation, except for about three hundred miles from its mouth. The Mekong is building a delta plain, but it is not nearly so large as the delta plain of the Yellow river.

61. India.

The great country of India is bordered on the north by the Himalayas. In the south it contains the plateau of the Deccan in the large V-shaped peninsula. Between the Himalayas and the Dekkan are broad river plains.

India is in the path of the monsoons. In the hot season these winds blow from the sea to the land; in the colder season they blow from the land to the sea.

In the Indian ocean north of the equator, not only the winds but the currents also flow back and forth as the seasons change. Soon after the wind alters its direction, it turns back the ocean current, and both flow together till the monsoon again shifts with the season.

The Himalaya mountains form the greatest rain and snow producer in the path of the summer monsoons from over the Indian ocean. Both the northern and the southern slopes of this range are drained by rivers that flow into the low plains of India.

The largest annual rainfall in any part of the world is supposed to be at the town of Cherrapunji, in the mountains about two hundred miles north of the bay of Bengal. This town is a little more than 4000 feet above sea level and is walled in on the north by steep ranges rising 2000 feet higher.

The moist monsoon from the sea ascends more than a mile before it surmounts the ranges. In rising over them, the air expands, cools and gives down from 400 to 600 inches of rain each year upon the town.

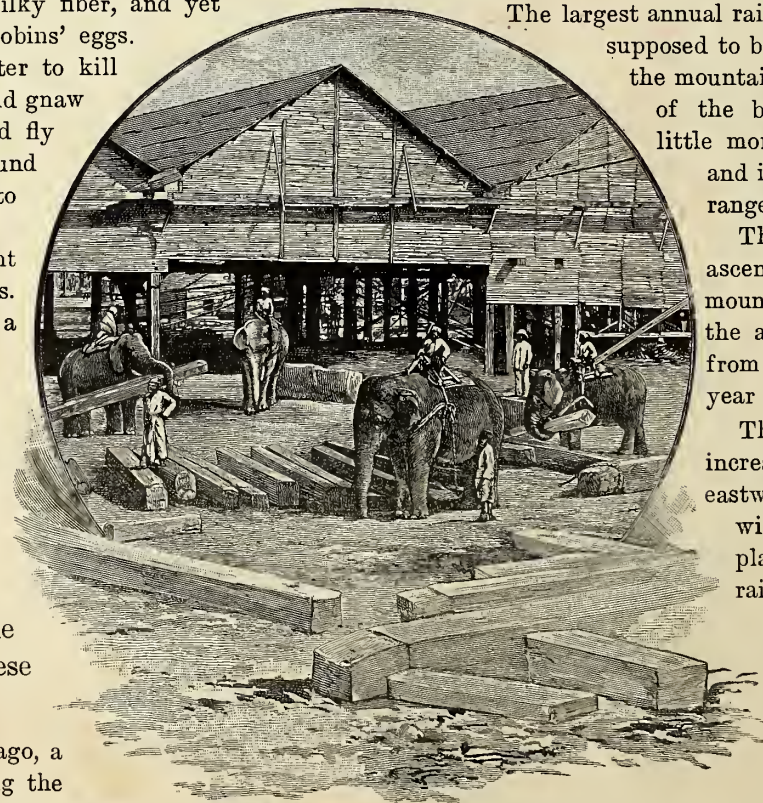
The snows of the Himalayas are increased by winter storms which drift eastward, like those of the westerly winds elsewhere. The northern plains of India often receive light rains in the same season. This fact seems to show that in winter, the belt of westerly winds reaches far enough south to influence the climate of northern India, both in the mountains and in the plains.

To avoid the extreme heat of the plains, many Europeans living in northern India spend the hot season on the "hills," or low ranges along the southern border of the Himalayas.

Below the snow line, forests cover the southern slopes of the Himalayas. Near the foot of the range, trees, vines, bushes and grasses form dense jungles in which tigers, elephants, rhinoceroses and other huge beasts are found. One of the pictures on page 68 shows some of the tree ferns of that region. See pictures, p. 117.



A Chinese Junk.



Trained Elephants, India.

Above the wet jungles is a belt of hard-wood trees, — oak and walnut. Still higher, the mountain slope is covered with rhododendron shrubs with their acres and acres of large showy blossoms.¹ Between these and the snow line stands the belt of soft-wood or cone-bearing trees.

Most of the rivers of the plain of India are included in three systems, — the Indus on the west, the Brahmaputra on the east, and the Ganges in the middle part.

These three river basins are in the warm belt and also in the path of the moist southwest monsoons. The climate is therefore hot or warm most of the year. The heavy rains fall while the summer monsoon lasts. The dry season occurs when the winds blow from the land to the sea. *See maps on pages 22 and 23.*

All along the foot of the Himalayas, as of other high ranges, cool evening breezes flow from the mountain valleys and enter the warmer lowland. These winds last far into the night and greatly lessen the sultry heat.

The upper portion of the Indus lowland, near the foot of the Himalayas, is well watered and is the richest wheat region in India. The lower part of this river basin is a desert.

Large sand bars form shoals in the bed of the Indus river. Navigation is therefore difficult, but steamers succeed in going up the river as far as the wheat country.

The plain of northern India, like that of the valley of California, is formed of land waste brought by the rivers from the mountains. Many branches of the Ganges river rise in the southern slope of the Himalayas. So much waste in the form of gentle alluvial slopes has been washed from the slopes of this range, that the Ganges river has been pushed far southward towards the Dekkan. Near the mountains the coarse waste forms steep slopes, but far out in the valley the fine waste forms very gentle slopes.

On the lowland, the divide between the Indus and Ganges basins is formed where the plain built by the rivers is a little higher than on either side, east or west.

¹ The flowering shrubs in the picture of Mt. Mitchell, on page 42, are rhododendrons. They often cover thousands of acres.

Near the base of the mountains, the gravels are moist with ground water and are covered with forests; but the greater part of the plain has no forests, and over much of the surface there are few trees, except in irrigated gardens.



A Hindu.

The Ganges system has built very large flood plains, sloping only a few inches to the mile. In the rainy season, these plains are flooded far and wide, thus receiving fresh soil from the highland slopes. The Ganges and Brahmaputra rivers unite in making a large delta plain crossed by a great network of distributaries.

The plains of the Ganges basin are carefully irrigated by means of canals and ditches leading from the rivers. The rainfall of the summer season is thus made to serve for the entire year, often through long periods of drouth.

Before India became a British possession, suffering from famines was common when ever the rains came late or in small quantity. There is not so much suffering now, because the English people have improved the canals and have also built railroads which can quickly carry supplies to famine-stricken provinces.

Rice is the leading crop in the delta lands and in the lower parts of the flood plains. Farther inland, *millet* is the chief product and is the staple food in nearly all parts of India. Cotton is the most valuable article of export from the Ganges plain.

The Ganges river is navigable for more than a thousand miles through its great flood plains, and is alive with boats carrying products from place to place.

In summer, violent thunderstorms occur in the Ganges plain. Squalls precede these storms and fill the air with dust. Then follow the clouds with lightning and rain, and all go sweeping down the plain.

Destructive cyclones, or violent whirling storms, are common in the great delta plain of the Ganges and Brahmaputra rivers. The winds sometimes drive the sea-water onto the low delta lands, forming storm floods in which thousands of people are drowned.

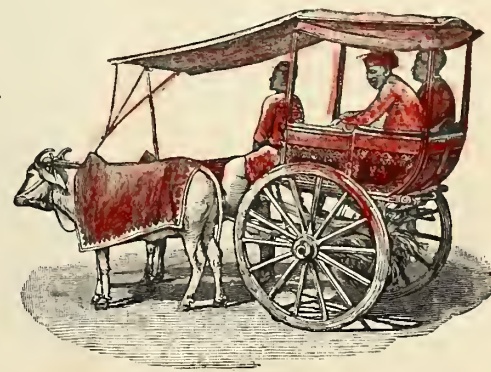
The Brahmaputra river, like the Indus, flows in a deep inland valley on the north flank of the Himalaya range. Cutting through the eastern part of the range, the Brahmaputra crosses the low plain of northeast India and joins its delta with that of the Ganges river. This great double delta is slowly growing southward into the bay of Bengal.



State Elephant, India.



A Zebu Cart, Ceylon.



Cart drawn by Zebras, India.

The *teak* tree abounds in India and in the large peninsula of Indo-China still farther east. When the wood of the teak has been thoroughly dried, it will not shrink, warp nor crack, even under the tropical sun. This wood is very strong, is easily carved, and takes a fine polish. These qualities make it very valuable.

The lowlands of northern India, except the desert region of the lower Indus, are densely peopled. These lowlands, together with the V-shaped peninsula on the south, support about one fifth of the people in the world. Most of the natives are called *Hindus*. They belong to the white race.

Ages ago the people now known as Hindus moved into India, probably from some part of central Asia, and conquered the native tribes. Many of the descendants of these natives are now found in the hilly or mountainous regions of India. Highlands are often a place of refuge for man, as well as for the lower animals.

Southward from the Ganges basin extends the great V-shaped peninsula of the *Dekkan*. This is mostly a low plateau region, about equal in height to the Appalachian highland. The peninsula has low ranges facing the sea on both sides and is partly separated from the rest of India by a hilly range on the north. Within the triangle thus formed, about 100,000,000 people have made their homes, — many more than dwell in our entire country.

The Dekkan is highest on the west side, and its main streams therefore flow eastward into the bay of Bengal. The Western Ghats rise abruptly from a narrow coastal plain. The steep western slope is in the path of the southwest monsoon, and therefore receives very heavy summer rainfall. The rains of the inland plateau east of the Western Ghats are not so heavy. Can you tell why?

During the wet season the rain water is stored in large hollows or reservoirs; then when the dry seasons come, the water is led in ditches over the lower tilled land.

The lava-flows of the Dekkan peninsula have been fully as great as those in and around the Columbia plateau. In each case the

molten rock covered many thousand square miles. The Dekkan lava-flows are much the older and the more deeply cut by valleys. The surface is finely weathered, making dark soil that is very fertile. The middle picture on page 12 shows part of this plateau.

The portion of the Dekkan that is not buried in lava is mostly an old mountain region greatly worn down. Gold is found in the stumps of the old mountains.

The rivers which flow eastward across this peninsula have made flood plains and deltas of wonderful fertility. For ages these lowlands have yielded immense crops of rice. All over the peninsula, except on the rugged mountain slopes, cotton and grain are raised. There, as in northern India, millet is the chief article of food among the masses of poor people. Cocoanuts are a leading product. See picture on page 97.

The island of Ceylon, off the southern coast of India, is very fertile and yields about the same kinds of products as the adjacent mainland. Large quantities of cinnamon, tea, coffee and cinchona are exported from this island.

Railroads lead from nearly all parts of India to the port of Bombay on the west coast, to Calcutta in the Ganges delta, and to Madras on the southeast coast. These are the chief ports through which the cotton, rice and other products are sent to foreign countries, and through which clothing and tools are received in return.

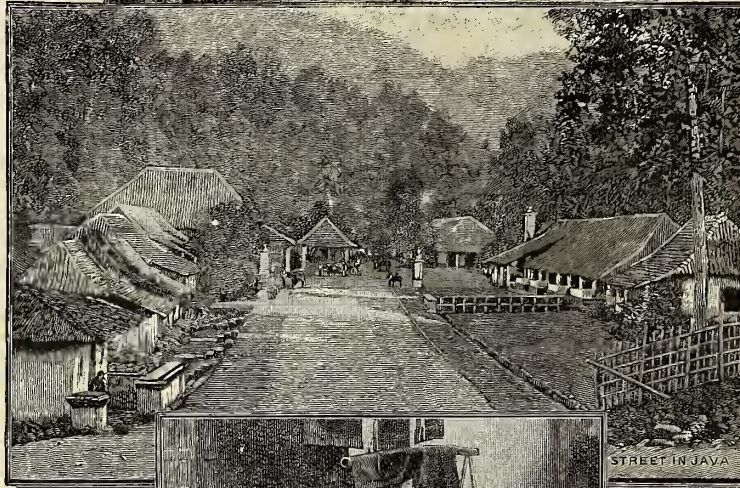
62. Asiatic Islands.

Long curving chains of islands lie east and south-east of Asia and partly inclose large border seas. These islands contain hundreds of volcanoes, many of which are now active.

Fujiyama, in Japan, is the most noted of these volcanoes. Its cone rises about two miles and a half above sea level, and its crater is very deep. Fujiyama is not now active, but nearly two hundred years ago it burst forth and sent a heavy shower of ashes far and wide

over the country. Its great cone was cracked and split. Many thousand people in the surrounding country were killed during the eruption.

To the people of Japan, Fujiyama is a sacred mountain, and many pilgrims ascend it each summer.



The large islands in the Japan group consist mainly of old volcanic hilly country, but there are also many wide plains. Tea, grain and the mulberry tree are raised in the uplands, while nearly all the lowlands are used for rice fields. Here, as in China, rice is a very valuable food product.

A coarse grass-like plant called *bamboo* grows in Japan, as well as in most parts of southeast Asia and the border islands. Bamboo is also found in other warm lands. The hollow jointed stems grow to the height of forty or fifty feet, but some stems are more than seventy feet high.

Houses are in part made of strips of bamboo stems. The tender shoots are served as food. The softer parts of the stalks are beaten into pulp and are used in making paper. Strips of bamboo are made into baskets, chairs, beds and various other articles, though the Japanese themselves do not use chairs or beds.

The rivers of Japan, though short, are useful for floating logs of cedar and pine from the hilly districts to the saw-mills near the coast. Large flat-bottomed boats on these streams carry produce down to the ports.

The people of Japan belong to the yellow race. Their number is more than half as great as that of our own nation. Yokohama is the chief port

through which foreign nations trade with the Japanese. Silk, tea and rice are important exports.

Java, Sumatra, Borneo, Celebes, the Philippine and many other islands southeast of Asia are often called the *East Indies*.

Thousands of years ago these islands were probably connected with Asia. The seas around them are mostly shallow, and the broken coastlines formed by the drowning of valleys show that the land has settled. Moreover many of the same kinds of large animals are found both on the mainland and on the large border islands, but not beyond the deeper water which separates these islands from those nearer Australia.

Locate Java on the *key map*, page 97. In what direction is it from Borneo? From Sumatra? From Australia? From the mainland of Asia? What rain belt crosses Java, Borneo and Sumatra?

The groups of islands in the East Indies have a hot climate and abundant rainfall. Their soil is therefore very productive. Sugar, coffee, tea, spices and rice in large



Banyan Tree.

and form a grove covering several acres.

Java is the most productive and the most densely populated island of the East Indies. This one small island supports a population equal to one third that of the United States.

Most of the people in the East Indies belong to the brown race. Many white people from Europe have settled along the coasts of the islands, especially in the seaports. Nearly all the islands are claimed by nations in Europe.

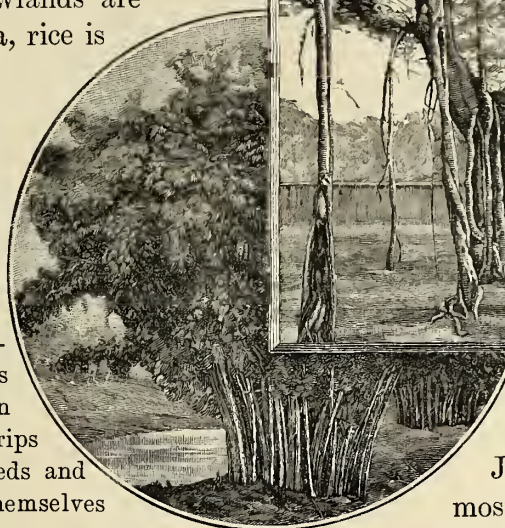
Sumatra consists mainly of a mountain region along its southwest coast, and broad lowlands stretching from this highland to the northeast coast. The rivers which cross this lowland are building great deltas. Coffee and sugar are valuable exports.

Borneo is one of the largest islands in the world. Its area is equal to nearly one tenth that of the United States, exclusive of Alaska. This great island has a central plateau from which several ranges branch into the coastal lowland.

Among the Malay people of Borneo are many tribes of Dyaks. These are thought to be descendants of the earliest natives. The Dyaks build houses or huts of bamboo, as shown in the picture on the opposite page. These natives weave cloth and make iron tools. Among the large animals of Borneo are the wild ox and the orang-outan, a man-like ape. There are also many wild pigs.

The Philippine group consists of more than 1000 islands. In the more rugged portions of these islands are found thousands of dwarf people called *Negritos*. The more fertile lands are held by Malay people who have driven off the Negritos. There are also many Chinese and some white settlers, — many of the latter being Americans and Spaniards, for the islands belonged to Spain, though now under the control of the United States.

Large quantities of sugar, hemp and tobacco are raised on these islands and are the most valuable exports from Manila, the chief seaport. See *Supplement*.



Bamboo.



Fujiyama, Japan.



Mikado's Palace, Japan.





RELIEF MAP OF EUROPE.

EUROPE.

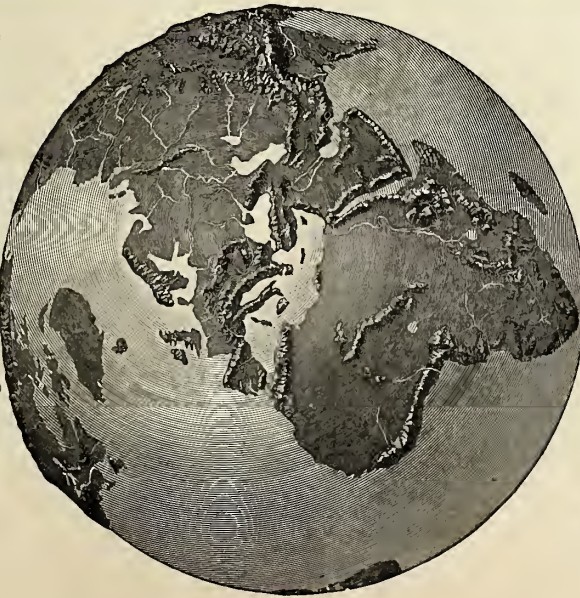
63. Map Studies.

Which is the larger, — North America or Europe? What oceans lie between these continents?

What seas and mountains bound Europe on the south? What mountains, river and sea separate the northern plain of Eurasia into two parts, — one in Asia and the other in Europe? Which of these parts is the larger?

Which heat belts cross Europe? In which of these belts is the broad middle part of the continent? What portion of Europe is in the warm belt? In which belt of winds does Europe lie?

Where are the Alps? In what general direction does the highland of southwestern Europe



extend? Compare it with the Rocky Mountain highland, — in trend, — in length, — in breadth. See globe maps.

Name two rivers flowing into the Caspian sea. Where are the Valdai hills? Describe the course of the Volga river; — of the Dwina river; — of the Danube river. Which one of these rivers flows in the coldest region?

Draw the general shape of Europe, — using three or four straight lines.¹ Sketch each coast. Which has the more regular coastline, — North America or Europe?

Name five large bodies of water that partly surround the Scandinavian peninsula. See colored map of Europe.

What sea is east of England and Scotland?

¹ See guide map of Europe, in the Supplement.



64. Europe.

Europe is nearly one third larger than the United States, exclusive of Alaska. This continent forms the western part of Eurasia.

Europe may be divided into three regions, — mountainous highlands in the southwest, lower highlands in the northwest, with lowlands between the highland regions and



also spreading far to the northeast. Many peninsulas and seas make the coast of Europe more irregular than that of any other continent.

Almost the whole of this continent is in the cool belt. Only the southern peninsulas project into the warm belt.

Europe is in the path of the westerly winds. The west coast therefore receives the heaviest rainfall, but a fair amount of rain falls in the interior, though becoming less and less as the farther inland regions are reached. The rainfall around the Caspian sea is light.

Owing largely to the winds from over the drift of the Gulf stream, the western part of Europe has a much milder climate than the Atlantic and Arctic coasts of America at the same distance from the equator.

The many seas which border on Europe help to give much of it an even climate; but the great plain in eastern Europe is far away from the Atlantic ocean and therefore has hot summers and cold winters.

65. Region of the Alps.

The outlet of the Black sea separates the plateau region of southwest Asia from a chain of highlands stretching westward to the Atlantic coast. The Alps which form the mountain-center of southwest Europe are about as high as the Rocky mountains in the park region.

The Alps have many sharp peaks, for they are too young to be greatly worn down. They are not nearly so old as the Appalachian highland. Slight earthquake shocks are frequent in the Alps and are taken to mean that the mountains are still growing higher.

As in other young and steep-sided mountains, there have been many snowslides and landslides in the Alps. Villages have thus been destroyed and many people killed. Violent blasts of wind are brushed down by large snowslides and advance even beyond the snow, blowing down trees and houses.

Among the Alps are great snow-capped peaks down whose sides long glaciers slowly wind, melting in the valleys. Mt. Blanc, the loftiest of these peaks, is about three miles



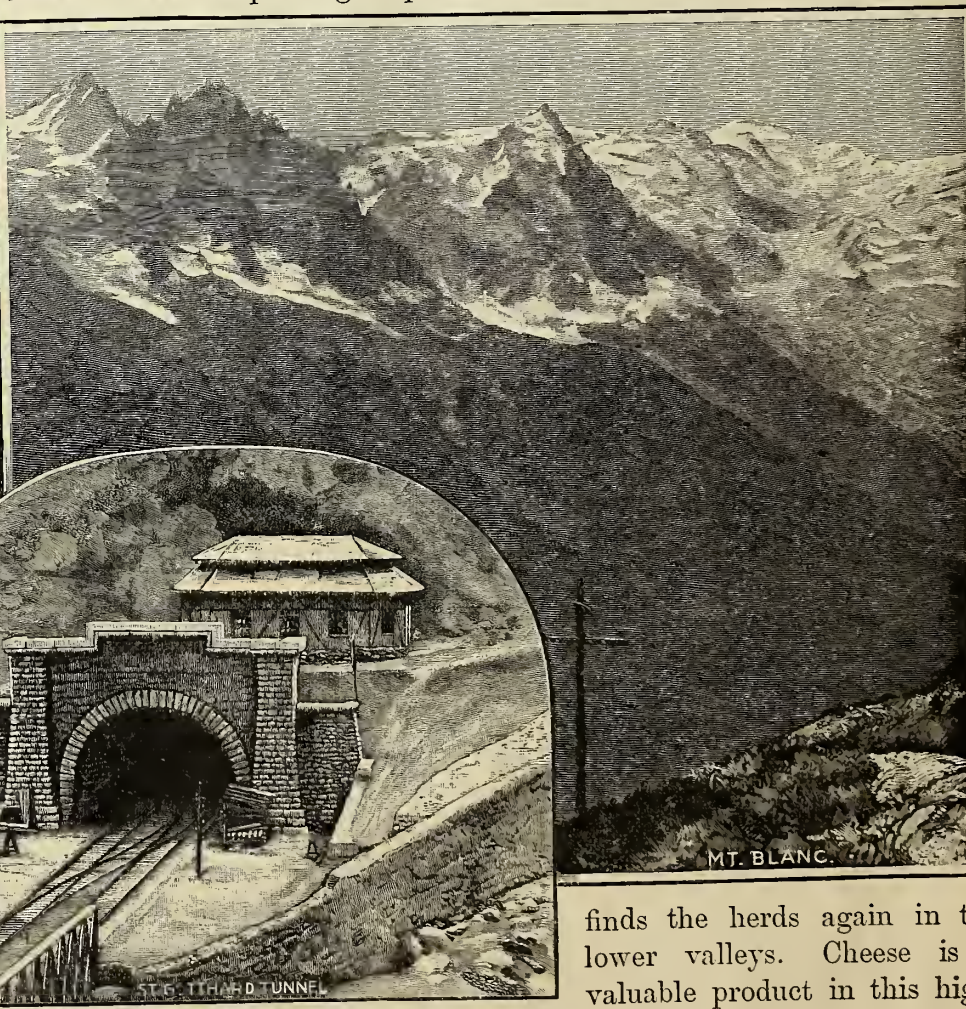
Ridges and Troughs of the Jura Region.

Beautiful lakes abound near the margins of the Alps. The Rhone river flows into and out of Lake Geneva, while the waters of Lake Lucerne find their outlet in a branch of the river Rhine.

Thousands of cattle graze in the valleys among the Alps. As the warm season approaches and the winter snow melts away, the cattle are driven to the grassy slopes high up the mountain sides. The cold season



TERNI FALLS ITALY.



MT. BLANC.

high, — a little higher than Mt. Whitney in the Sierra Nevada. The snow-cap on Mt. Blanc reaches halfway down its sides.

The Alps are pierced by several railroad tunnels. The St. Gothard tunnel is nearly ten miles long, — the longest in the world. It connects the Swiss plateau with the basin of the Po river. Mt. Cenis tunnel is near the western end of the Po basin.

land region and is a leading article of export. finds the herds again in the lower valleys. Cheese is a valuable product in this high-

There is very little coal in the Swiss plateau, but swift streams supply plenty of power for the mills and factories. The Swiss people weave large quantities of silk and cotton goods, and make many fine watches.

The western part of the Alps bends southward between the valleys of the Po and the Rhone. This part of the mountain chain extends to the shore of the Mediterranean sea. A long branch called the Apennines runs the entire length of the peninsula of Italy.

On the western side of the Rhone valley rises the broad range known as the *Cevennes*. These mountains are much older and lower than the Alps and contain the sources of many streams flowing westward to the Atlantic.

The Jura mountains extend from the Rhine river southwest into the valley of the Rhone. They consist chiefly of low arches or folds, so young that they have not yet been greatly worn. See picture on opposite page.

From lake Geneva the Rhone river follows a winding course through the southern part of the Jura ridges and then unites with the Saone, turning almost due south.

The mulberry tree upon whose leaves the silkworm feeds is common in southern Europe. The city of Lyon, at the junction of the Rhone and Saone rivers, has the largest silk manufactories in the world.

The Rhone, like all other rivers flowing into seas having only faint currents, is making a delta. This river is so rapid that only steamers can stem its current above the delta plain, and thus reach Lyon.

On the north of the Swiss plateau, many old and low mountains extend far out into Germany. The surface

of these mountains has been worn down to layers of rock that were once deep in the earth. They are rich in iron ore and other minerals.

There are so many mines in these old mountains that the Germans speak of all mining as *mountain work* (*Bergwerk*).

On the east the Alpine highland reaches out to the Carpathian range through which the Danube river has cut a gorge called the *Iron Gate*. See lesson 69. On the southeast the highland sends out branch ranges into the Balkan peninsula. These are mostly low, like the mountains shown in the picture of *Marathon*, on this page.

66. The Spanish Peninsula.

The great peninsula in southwest Europe is known as the *Spanish peninsula*.¹ The lofty Pyrenees mountains extend across its isthmus. This great peninsula is shared by two countries, — Spain and Portugal.

Among the mountains of southwest Europe, the Pyrenees are next in height to the Alps and form a lofty barrier between France and Spain. Railroad lines have been built around the ends of the Pyrenees range.

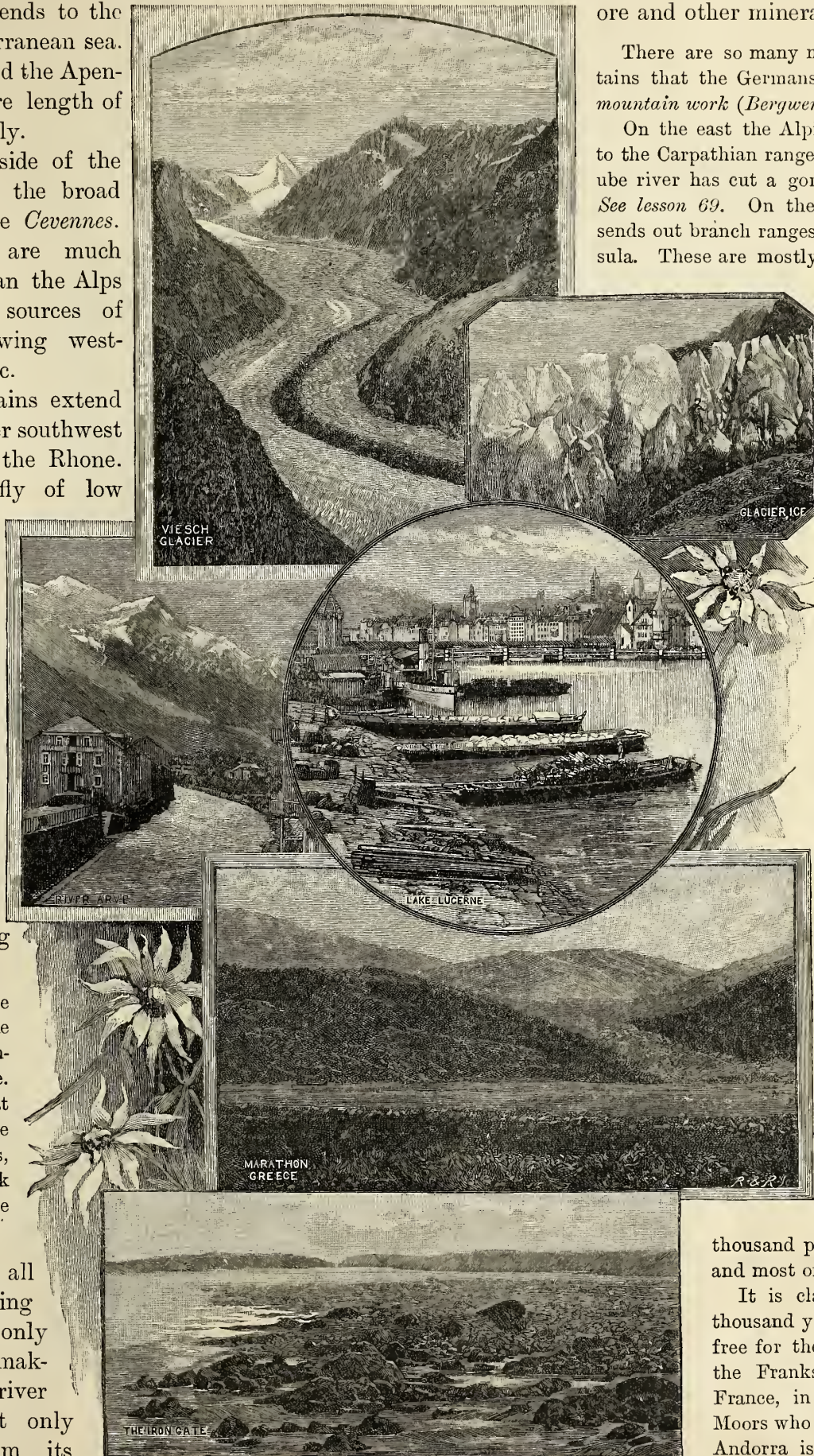
Far in among these mountains is the little state of *Andorra*. It occupies a few small but elevated valleys.

There are only a few thousand people in the entire state, and most of them are shepherds.

It is claimed that more than a thousand years ago, Andorra was set free for the help its people gave to the Franks, or people of ancient France, in their wars against the Moors who then held parts of Spain. Andorra is now free only in name.

The little state pays tribute both to France and to a Spanish bishop.

¹ This peninsula is sometimes called the *Iberian peninsula*, after the Iberian tribes which lived there long ago.



Some of the buildings made by the Moors may still be seen in the Spanish peninsula. Grandest of all is the *Alhambra*,—the palace and fortress of the Moorish kings. It is in the city of Granada. This was the last stronghold of the Moors in Spain, and was captured the year that Columbus first set sail for the New World. See map of *Europe*, page 165.

A few hundred thousand people known as *Basques* live in the Cantabrian mountains of northwest Spain. The Basques are the remnant of early tribes that once held the Spanish peninsula. These mountains, like many others in the world, are a place of refuge for the descendants of a conquered people. The Basques are mostly shepherds.

The Spanish peninsula consists mainly of broad table-lands, with a border of narrow coastal plains on the east and the west. Mountain ranges almost inclose the upland region, and other ranges extend across it. The general level is about half a mile above the sea.

This broad upland surface is swept by chilly winter winds and is parched by summer sunshine. Only the spring and autumn months are mild. The rainfall is so light that the plateaus are almost treeless.

In what direction do the principal mountain ranges in the Spanish peninsula extend? Where is the Sierra Nevada of Spain?

Describe the courses of the Ebro and Guadalquivir rivers.



Spanish Milkman.

The river valleys in this peninsula are fertile. Those of the Ebro and Guadalquivir rivers form the broadest lowlands, but even these are not very broad. The narrow coastal plains also are fertile. Those on the west and southwest coasts receive heavy rainfall; those on the east are well irrigated from immense reservoirs in the uplands.¹ Wheat and barley are the chief grain crops, but the peninsula is noted for its vineyards and orange groves. Wine is the chief article of export.

On the southern coast of Spain, near the strait of Gibraltar, a small but famous peninsula extends into the sea. The body of the peninsula consists of a mass of rock about two miles and a half long, known as the *Rock of Gibraltar*. This Rock was once an island, but sandy waste filled in the strait at its northern end, and now a flat neck unites the Rock with the mainland.

¹ Many of the reservoirs were built centuries ago by the Moors.

Gibraltar is a fortress belonging to the British nation. The north and east sides of the huge rock are very steep, but the west side has a more gentle grade, and a town has been built at its foot. This side is also strongly fortified by immense walls and galleries, most of which are heavily armed with cannon.



The Alhambra, — Moorish Palace, Spain.

67. The Po and the Apennines.

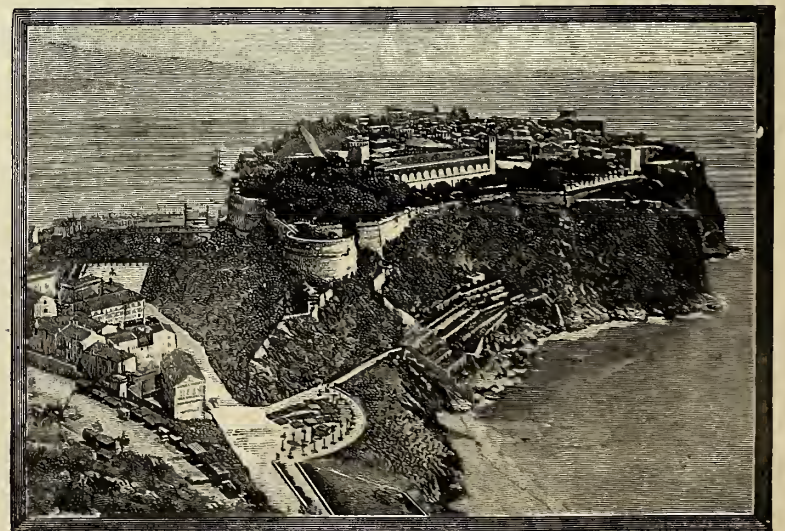
Following the Mediterranean coast from Spain to Italy, we pass *Monaco*, the smallest state in Europe. The total area of the state is only about eight square miles. It is near the southeast corner of France. The city of Monaco, in the state of the same name, occupies a rocky headland, as shown in the picture.

The Po river flows through a plain that is not many feet

above sea level. This plain is made of waste worn from the Alps and the Apennines. The lowland consists of flood and delta plains.

The melting snow and ice in the high Alps feed many of the Po branches. One of these flows from a glacier on Mont Blanc.

Along the northern border of the plain, near the foot of the Alps, are some of the Alpine lakes that are famous for their beauty. Among these are Como, Garda and Maggiore. These lakes lie in places where the country seems to have been bent down, changing parts of the river valleys into basins. Former glacial action has aided in scouring out the lake basins, and much waste brought down by the ice still lies in heaps, or moraines, around the foot of the lakes.



Monaco.

The Adige river drains part of this lowland but does not join the Po. The floods of these rivers are so dangerous that long banks, or dykes, have been built to confine the water. As the streams continue to fill their channels with waste from the mountains, the dykes are built higher. In some places the surfaces of the rivers are now higher than the plain.

The streams flowing from lakes into this lowland are clear, but those coming directly from the mountains carry sand and finer rock waste, and are building up the plain.

The marshy deltas of the Po and the Adige are rapidly growing into the Adriatic sea. Some places that were once seaports are now several miles inland. Along the coast, sandy islands almost inclose lagoons.

The city of Venice is built on islands in one of these lagoons. In this city, canals partly take the place of streets. Boats called *gondolas* are seen everywhere on the canals.

Irrigating canals reach almost every part of the valley of the Po and the Adige, making it one large garden. Grains of all kinds thrive there, and the foothills are covered with vineyards. The meadows are mowed five or six times a year, — yielding fine grass for dairy cattle. Mulberry trees abound.

Milan, the largest city in the Po valley, is a great railroad center and therefore a distributing point for exports and imports.

Railroads from this city lead through the St. Gotthard and Mt. Cenis tunnels, about which we read in lesson 65. The St. Bernard pass is one of the most famous passes in the routes over the Alps from the Po valley. Since the building of the railroads, these lofty passes have been little used by travelers.



Pass of St. Bernard.

From the fertile plains in the north, the Apennines extend towards the southeast through the entire length of the peninsula of Italy. This range is older than the Alps and has no such lofty peaks as those rising on the northwest of the Po basin, but the upper parts of the Apennines are buried in snow all winter.

Cold winds from the northeast often sweep over the Apennines, but the foothills and coastal plains southwest of the range are sheltered and produce many kinds of fruit. Among these are oranges, lemons, olives and grapes. This region is also famous for mulberry trees. Silk is the most valuable export from Italy.

There are many volcanoes in southern Italy and the neighboring islands, but there is only one active volcano on the mainland of Europe. That one is *Vesuvius*, near the bay of Naples, on the southwest coast of Italy.

Many centuries ago the fertile sides of Vesuvius were covered with vines and olive trees. The people who then lived on the slopes of the volcano did not know that their home was near a



Venetian
Gondolier.

crater that might at any time pour forth lava and bury them. There came a time however¹ when a great cloud of steam and dust rose from the crater and spread far out over the land and the sea. Lightning played among the clouds, and showers of ashes fell on the groves, the vineyards and the cities. For three days the thick dust shut out the sunlight. Bright flashes lit up the clouds, as the gases burst out and blew off the top of the glowing mass of lava. The hot steam changed to rain and mingled with the ashes, making rivers of mud that flowed down the mountain sides, sweeping away the vines and trees and burying the cities. When the eruption ceased, the layers of mud and ashes were so deep that no trace of the houses could be found. Centuries passed and people no longer knew where the cities were buried; but beneath new vineyards and mulberry groves² lay many works of art, and the ruins of temples, homes, baths and paved streets. Some of these have now been dug out, and they teach us a great deal about the customs of the Roman people who lived in that early time.

After this eruption, Vesuvius was not very active for about fifteen hundred years. Then it again became violent and killed thousands of people. Now and then the volcano breaks forth, but not with such force as in ancient times.

Mt. Etna, on the island of Sicily, is the loftiest volcano in Europe, yet it is only a little more than half as high as Chimborazo.

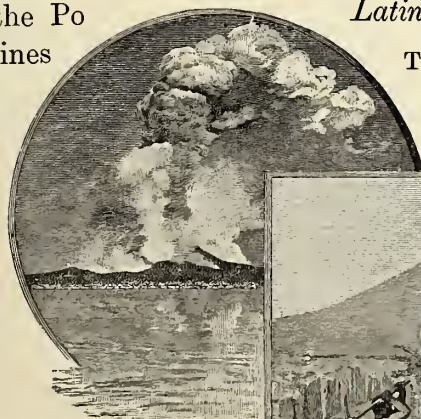
Rome, the most noted of ancient cities, stands on the banks of the Tiber, a small river flowing from the Apennines in middle Italy. About one third of the words in our language are derived from *Latin*, — the language of the ancient Romans.

The beautiful Terni falls, shown in the picture on page 76, are about 70 miles north of Rome. The water in one part of the falls leaps down 330 feet.

On the northeast slope of the Apennines, not far from the source of the Tiber, lies the small free state of San Marino. The state covers only thirty-two square miles and has a population of about 8000;

¹ The eruption took place in 79 A.D. The cities of Pompeii, Herculaneum and Stabia were buried.

² The eggs of the silkworm were first carried from China to Europe about 550 A.D., — nearly five centuries after the great eruption.



Vesuvius.



Excavations in Pompeii.



Italian Piper.

but small as it is, San Marino is a very old state. Most of the people in this small state tend cattle or raise wine grapes.

The leaning tower shown in the picture is in *Pisa*, a city on the Arno river, Italy. Two thousand years ago, Pisa was only two miles from the mouth of the Arno; now it is six miles, for the river has meanwhile built its delta out into the sea.

The famous leaning tower is 183 feet high, and it leans 13 feet from an upright position. The walls of the tower are very thick and are made of marble.

68. The Balkan Peninsula.

Many ranges branch from the eastern end of the Alps. Some of these turn towards the southeast and divide into smaller ranges forming the highland in the Balkan peninsula. This broad peninsula stretches from the Black sea to the Adriatic.

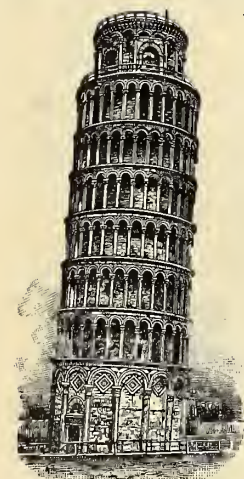
The Balkan range is the highest in the peninsula. These mountains extend east and west along the southern border of the Danube basin.

Forests of pine and oak grow on the Balkan slopes and in other parts of the rugged highland of this peninsula. Thousands of swine feed on the acorns.

The roses which thrive near the Balkan range yield a perfume known as *attar of roses*.

The lowlands in the Balkan peninsula are very fertile. More than one half the land is arable, or fit for plowing. The hilly portions afford good pastures.

The middle belt of the Balkan peninsula is occupied by Turkey. Owing to the poor way in which the country is governed, the people are shiftless and do not make good use of their land. Wheat, raisins and tobacco are valuable products. Constantinople, on

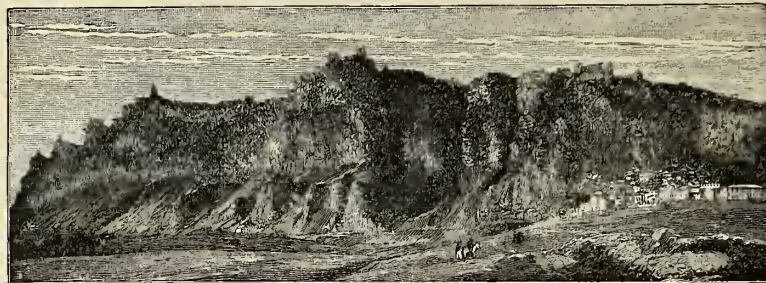


Leaning Tower of Pisa.

the strait called the *Bosphorus*, is the chief port of Turkey.

The Pindus mountains are low, but they run like a backbone through the southern part of the peninsula. There, in the small country of Greece, many deep and broad valleys lie between the branches of this range.

On the plain of Marathon, shown in the picture on page



San Marino.



Apollo Belvedere.



The Bosphorus.

77, the ancient Greeks won a great victory over a large army of Persians. This plain lies between the mountains and the sea. Most of the mountains in Greece are small and greatly worn, like those which overlook the plain of Marathon.

The broken coastline of Greece, and the many bordering islands, show that this land has been partly drowned. Most of these islands are spurs from the Pindus range, not wholly covered by water. Some of the islands are of volcanic origin.

The southern part of Greece is a peninsula having a very narrow neck known as the *isthmus of Corinth*. A ship canal has been

cut through this isthmus. The small raisins of Greece are called *currants*, — a corruption of the word *Corinth*. Currants are the most valuable product which Greece sends to other countries.

Many years ago the Greeks were famous for their learning and for their works of art. They built grand temples in which they placed beautiful statues made of marble or of ivory and gold. Many of the marble statues and the ruins of some of their temples still exist. The most famous temples were built on a fortified hill known as the *Acropolis*, in Athens.¹

69. The Plain of Hungary.

Where does the Danube river rise? Describe its course. Name a mountain range on the north of the Danube basin. Name a range on the south.

The Carpathian mountains partly divide *High Europe* from *Low Europe*.

The lowland part of the Danube basin which lies southwest of the Carpathian mountains is known as the *plain of Hungary*. This is a young plain which was formerly the bed of a lake.

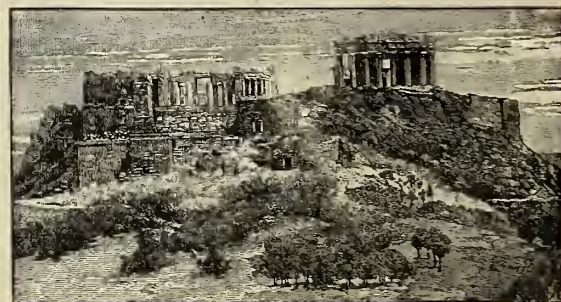
The leading products are sugar beets and grain. The plain of Hungary supports nearly one fourth as many people

as there are in the United States. The Danube and its branches form a water way to almost every part of the plain. The main river affords an outlet eastward.

The Danube leaves the plain of Hungary at the place where the inclosing ranges on the eastern side of the old lake basin are lowest. The river has there cut a long gorge across the range. This gorge is known as the *Iron Gate*. See picture, page 77.

¹ On the highest part of this hill stood the *Parthenon*, — grandest of all the temples. Within and without the Parthenon were statues and friezes which rank foremost among ancient sculptures. Many of these are now preserved in the British Museum, in London.

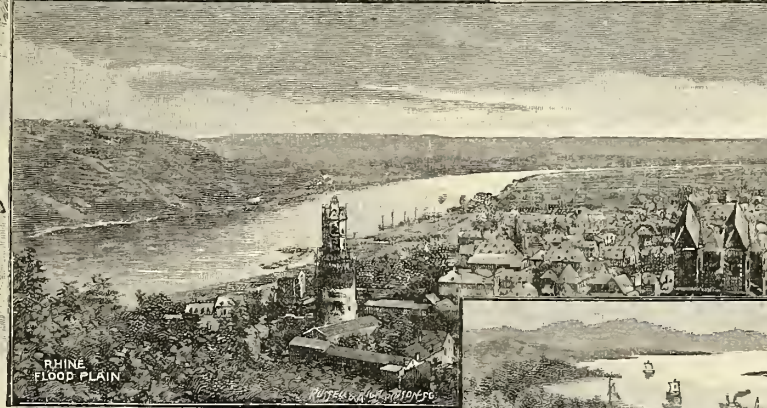
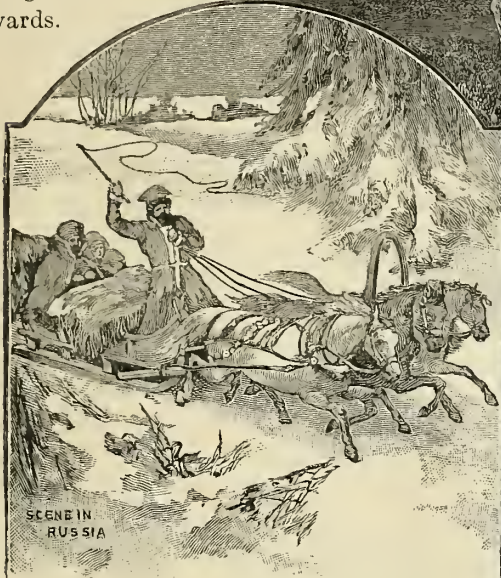
The *Apollo Belvedere*, a copy of a beautiful Greek statue, is now in the Belvedere gallery of the Vatican in Rome.



The Acropolis, Athens.

Northward from the middle Pyrenees stretches a gently-sloping alluvial fan built of waste from the mountains. The length of this fan, from the mouth of the mountain valleys to its outer edge, is about fifty miles.

The people in the Landes are mostly shepherds. Some of these go about on long stilts, but the custom is dying out. The eastern part of the Gironde basin has many large vineyards.



Northward from the Gironde river the central part of France is rolling and hilly.

Very low plains lie along the southern shore of the North sea. Part of this lowland is a young coastal plain, and part is the delta plain of the Rhine river. In some places, the land surface has sunk below the level of the sea, and dykes have been built to keep out the salt water. Portions of the plain have been reclaimed from the sea. Lagoons were surrounded by dykes to prevent more water from flowing into them and were then pumped dry.

The coastal plain forming part of this lowland is covered with a layer of sand containing seashells, and is therefore known to have been formed under the sea. Beneath the sand are layers of peat made of land plants, showing that the region was dry land before the sandy layer was deposited by the sea. In the peat are found Roman coins about two thousand years old. These coins show how very young the coastal plain must be, for it is younger than the peat. This part of Europe must have been under the sea and raised again within the last two thousand years.

Canals form a network over these lowlands and afford cheap water ways to all parts of the low country. Thousands of windmills are kept busy pumping water from the fields into the canals. A man's wealth may there be counted in



Battle-scarred House, Waterloo, Belgium.

windmills and cattle. One portion of these flat plains is known as *Holland*, or the *Netherlands*, — meaning *lowerlands*. On the southwest is Belgium.

The Rhine river, above its delta plain, has cut a deep valley through a broad rolling upland. Many of the Rhine branches also have worn valleys in this upland.

The Rhine is navigable to the border of the Swiss plateau. A channel has been cut for this river, in its middle course, so as to give a more direct route than through its old windings. The Rhine has formed flood plains on which many large cities have been built. The valley-sides, sloping down to the flood plains,

are far-famed for their vineyards.

The upland through which the Rhine flows is an old mountain region worn low and even, and then raised again. This is the old region mentioned near the close of lesson 65.

Most parts of these low mountains are wooded, and the Germans therefore speak of them as *forests* and not as *mountains*. Thus, they refer to the *Black forest* (*Schwarzwald*) — meaning *Black mountains*. In the forests are firs, pines, oaks and beeches, — both soft-wood and hard-wood trees.

This old upland region, rich in iron ore and coal, extends across Belgium and into France; also, eastward through Germany. The old mountains which rise above the upland are the hardest parts of the region, not yet worn down to the general level.

The battle-scarred house shown in the picture is near the village of Waterloo, about nine miles southward from Brussels, in Belgium. The house was torn by shot and shell in the great battle of Waterloo, in which the power of Napoleon was broken. This famous French general was banished to the lonely island of St. Helena, where he died. See map on page 89.

Northeastward from the Netherlands, low swampy or sandy coastal plains border on the North and Baltic sea-coasts. These lowlands are crossed by the Elbe, the Oder and the Vistula rivers, flowing from the border of the highland region.



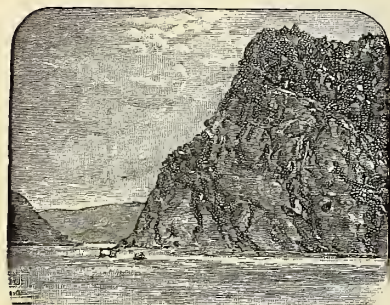
In this lowland ended the ancient ice-sheets which crept from the snowy Scandinavian highland across the Baltic sea. *See lesson 82.* As the ice melted at its southern end along the coast of Germany, the rock waste which had been dragged along formed many low hills, or moraines. In the hollows among these moraines lie countless little lakes.

Along the south shore of the Baltic sea are many bays partly inclosed by bars like those along the Carolina coast in the United States.

The regions on the west and north of the Alpine highland are in the path of the westerly winds of the cool belt and are therefore well supplied with rainfall. Cereals are plentiful in the rolling uplands, and many of the sunny slopes of the river valleys are covered with vineyards. Most of the grapes are used in making wine, some of which is sent to our country.

A large and thriving industry, on the plains reaching from France through Germany and into the valley of the Danube, consists in raising sugar beets and making sugar from their juice.

We have learned that iron ore, coal and other minerals abound in the old mountain uplands. These products have led to the building of mills and factories of almost every kind. Cloth and iron goods are leading manufactures.



Lorelei Rock on the Rhine.

Excellent clay for making pottery, and sand for making glass, are found in many parts of the region west and north of the Swiss highland.

The western part of Low Europe is thickly settled, because the climate is good, the country is suited to easy travel, and products are plentiful. Among the great centers of trade are Paris, Antwerp, Amsterdam, Hamburg and Berlin.

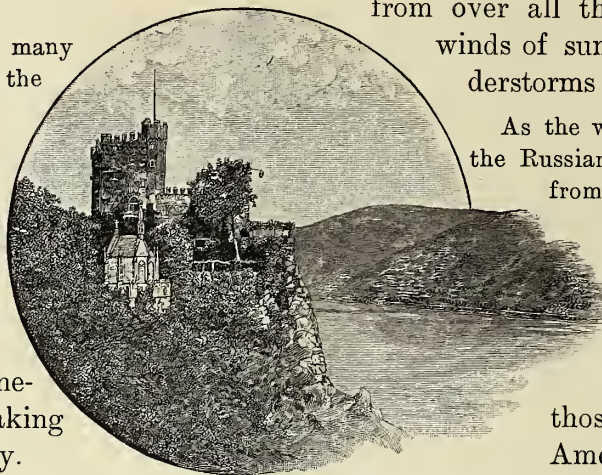
73. Low Europe — Eastern Part.

The great lowland of eastern Europe is known as the *plain of Russia*. It forms with the Siberian plain the northern lowland of Eurasia. The plain of Russia stretches from the Black sea and the Caucasus mountains to the Arctic coast, and includes one half of the continent.¹

One of the richest petroleum fields known in the world is in the region of the Caucasus mountains. Oil abounds near both the east and the west ends of the range. In recent years much attention has been given to the boring of wells, and to the refining and shipping of the oil. This region now rivals the oil fields in the northern part of the Allegheny plateau.

¹ Mt. Elburz, in the Caucasus range, is the highest mountain in Europe, but its summit is nearly 1000 feet lower than that of Mt. Logan.

The cold and heavy winter air of the interior plain of Russia helps to keep out the sea-winds. The heaviest rainfall therefore is in summer when the heated air is light and is easily pushed upward by the cooler winds from over all the border waters. These sea-winds of summer cause showers and thunderstorms like those on our prairies.



Castle on the Rhine.

As the whirling westerly storms pass over the Russian plain they draw in warm winds from the south and cold winds from the north, giving changeable weather like that in the Mississippi valley.

The northern portion of the plain of Russia consists of frozen treeless tundras like those along the Arctic coasts of America and Asia. South of the

tundras lies the forest belt which crosses the northern plain of all Eurasia.

The portion of the Russian plain known as *Finland* is very flat and contains thousands of lakes. The southern half of Finland is in the forest belt, but the northern part merges into the desolate tundras.

The surface of Finland was scoured by the ancient ice-sheet which spread out from Scandinavia. This region, like New England, has many lakes formed by the scouring of the ice or by the heaping of its rock waste. There are also many falls caused by the turning of streams into new channels across rocky ledges.

On the south of the forest belt are fertile treeless plains extending to the Black sea and to the salty steppes around the Caspian sea. The plains, except in the drier salty portion, yield immense crops of grain, and afford pasturage to large numbers of cattle, horses and sheep.

Through the forest belt and across the plains flows the Volga, the largest river in Europe. The Volga basin comprises about one fifth of the plain of Russia. The main river in this basin rises in marshes near the Valdai hills. These hills are only a few hundred feet above sea level, but many large streams rise in or near them.



Old Bell of Moscow.

For a long distance the Volga flows eastward, separated by an almost level plain from the Dwina on the north. Into what bodies of water do these rivers flow?

The Volga river, with its network of canals, forms the main water way through the Russian plains. It reaches almost all parts of the forest and grain districts, the mining region in the Ural mountains, the fur belt in the Dwina basin, the oil wells near the Caucasus range, and the salt beds around the Caspian sea. These water routes lead to all the border seas of the plain of Russia.

St. Petersburg is the largest city in Russia. Odessa is the chief grain port in the southern part of the great plain.

74. Africa.¹

A deep and wide canal about one hundred miles has been dug across the isthmus of Suez. The canal has no locks, for the two seas which it connects are on about the same level.

Before the Suez canal was made, the water route from all ports in Europe to India led around the cape of Good Hope. Vessels can now go through the canal and thus save about 4000 miles in the voyage. Port Said is at the Mediterranean end of the canal. *See picture on page 90.*

The canal is used chiefly by steamers and they pay a high toll. Sailing vessels that pass through the canal are towed, and as the expense is very great, nearly all vessels that depend on sails and wind go round the Cape.

Africa has a rounded outline, broken by very few bays. Almost the entire continent is a highland. Its average height above sea level is double that of Europe. The southern half is higher than the northern, and the eastern part is higher than the western. The coastal plains are very narrow, because the border ranges of the highland lie near the sea. Almost all parts of the continent inland from the coast ranges consist of plateaus.

All the great rivers of this continent have falls or rapids, and not a stream is open very far inland to large vessels from the sea. Great areas in Africa are deserts. The coastal regions near the equator are very unhealthy. For these and other reasons, large parts of Africa are still little known. Until the present century, only parts of the coastal regions of the "Dark Continent" had been explored, except the lands in the north; but we know far more about inner Africa to-day than was known about inner North America one hundred years ago.



Water Carrier of Morocco, Northern Africa.

Africa is the hottest of the continents. Only the extreme southern part of this great land mass is in the cool belt.

A wide region across the middle of the continent is visited by the equatorial rains. The southeast coast is in

the path of the trade winds from over the Indian ocean. These winds give rainfall to the seaward slopes of the highlands in their path, but give very little moisture to the inland region of southern Africa.

The Sahara desert is swept by the northeast trade winds. Their effect is very drying, because they blow mostly from over wide land areas and gradually become warmer as

they approach the heat equator.

At the north and south ends of the continent, the highland slopes facing the sea receive winter rains when the trade winds shift towards the equator, and the storms of the westerly winds reach those parts of the continent. *See maps on pages 22 and 23.* The summers are dry.

Because of this arrangement of winds and rains, Africa has a wide forest belt across its equatorial region, where the rains are frequent and heavy. On both sides of this belt, the forests merge into open grassy plains, where the rains are lighter, — falling when the equatorial rain belt moves over them. Beyond these grassy plains lie desert regions, — the Sahara in the north and the Kalahari in the south.

Near the equator the summer heat is not so strong as it is in the deserts. In the middle belt of the continent, clouds shut out much of the sunshine, and dense forests shelter the ground when the sun shines from a cloudless sky. In this belt, the land and the air are also cooled by frequent rains.

Intense summer heat is felt in the Sahara and Kalahari deserts, but especially in the former, although it is so far from the equator. There are neither trees nor grasses to shield the surface. During

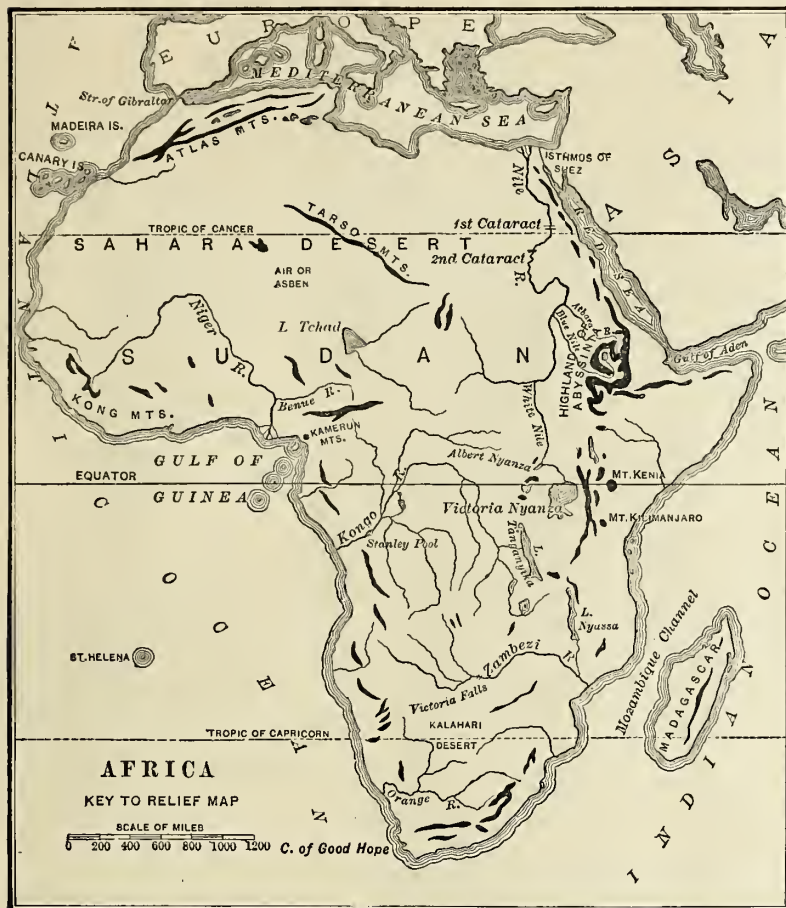
¹ The map studies on page 89 are to precede this lesson.



RELIEF MAP OF AFRICA.

the day, the dry sand or rock is quickly heated, and in turn heats the air. During the night, the bare surface and the cloudless air often become very cool.

The southern half of Africa is not so hot as the northern. In the south the continent is narrower and the interior is nearer the sea. The inland regions are therefore sooner reached by sea-winds, with clouds and occasional rains.



75. Map Studies.

Note: Now that we have studied four continents, we should be able to *read maps*, without the aid of many questions.

Describe the position of Africa with regard to the other continents and the oceans.

Sketch the map of Africa. Which of the continents that we have studied does it most closely resemble?

How does Africa compare in size with North America? With Asia? *Compare globe maps.*

What does the relief map show about the surface of Africa? Describe the courses of five large rivers in this continent.

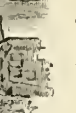
Refer to the maps on pages 21, 22 and 23, and tell what you can about the heat belts and seasons in Africa, — the winds which carry moisture to it, — and the ocean currents which reach its shores.

In what respects is Africa like any other continent? In what respects does Africa differ from each of the other continents?

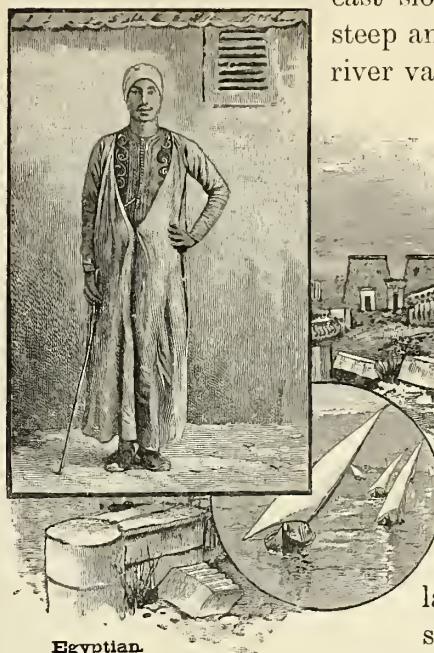
What seas almost sever Africa from Eurasia? What isthmus connects the two land masses?

76. Egypt and the Nile.

The highest plateau in Africa is that of Abyssinia. Its east slope facing the Red sea is steep and is not broken by large river valleys. The west slope is more gentle and is drained by branches of the Nile river.



The main river of the Nile system rises in the lake region of middle Africa and is the only large river flowing northward to the Mediterranean sea. The basin of the Nile is thought to be about as large as that of the Mississippi.



Egyptian.

Where is lake Victoria (Victoria Nyanza)? On which side of the equator does the greater part of this lake lie?

Lake Victoria is about three fourths of a mile above sea level. Its outlet is the river Nile.

Name two Nile branches that rise in the highland of Abyssinia.

For about five hundred miles along the White Nile, above its junction with the Blue Nile, there is only a narrow fringe of verdure. The rainfall is light and the country on both sides of the river resembles the steppes of Russia. In some places however are park-like plains where grassy tracts alternate with groves. Giraffes and elephants browse in the wooded parts of the plains. Acres of lilies float on the still water of the river, and many crocodiles and hippopotamuses swim about.

The Blue Nile and the Atbara are the main branches from the east. During the northern summer, when the equatorial rains reach the highland of Abyssinia, many torrents pour down these tributaries; but as the dry season approaches, the torrents dwindle away till only muddy



Sphinx and Pyramid, Egypt.

pools or even dry channels remain. The deeply-cut beds of these streams show that a great amount of waste has been carried away. A large part of the finer waste is borne down the Nile.

For hundreds of miles this great river flows through the desert and does not receive a single tributary. There the river has cut a long and broad valley and has made a flood plain several miles in width. Every summer, after the equatorial rains have fallen in the highland of Abyssinia and in the lake region of middle Africa, the Nile overflows its flood plain and deposits a thin coating of new soil. Most of this sediment is given by the Atbara to the Nile.

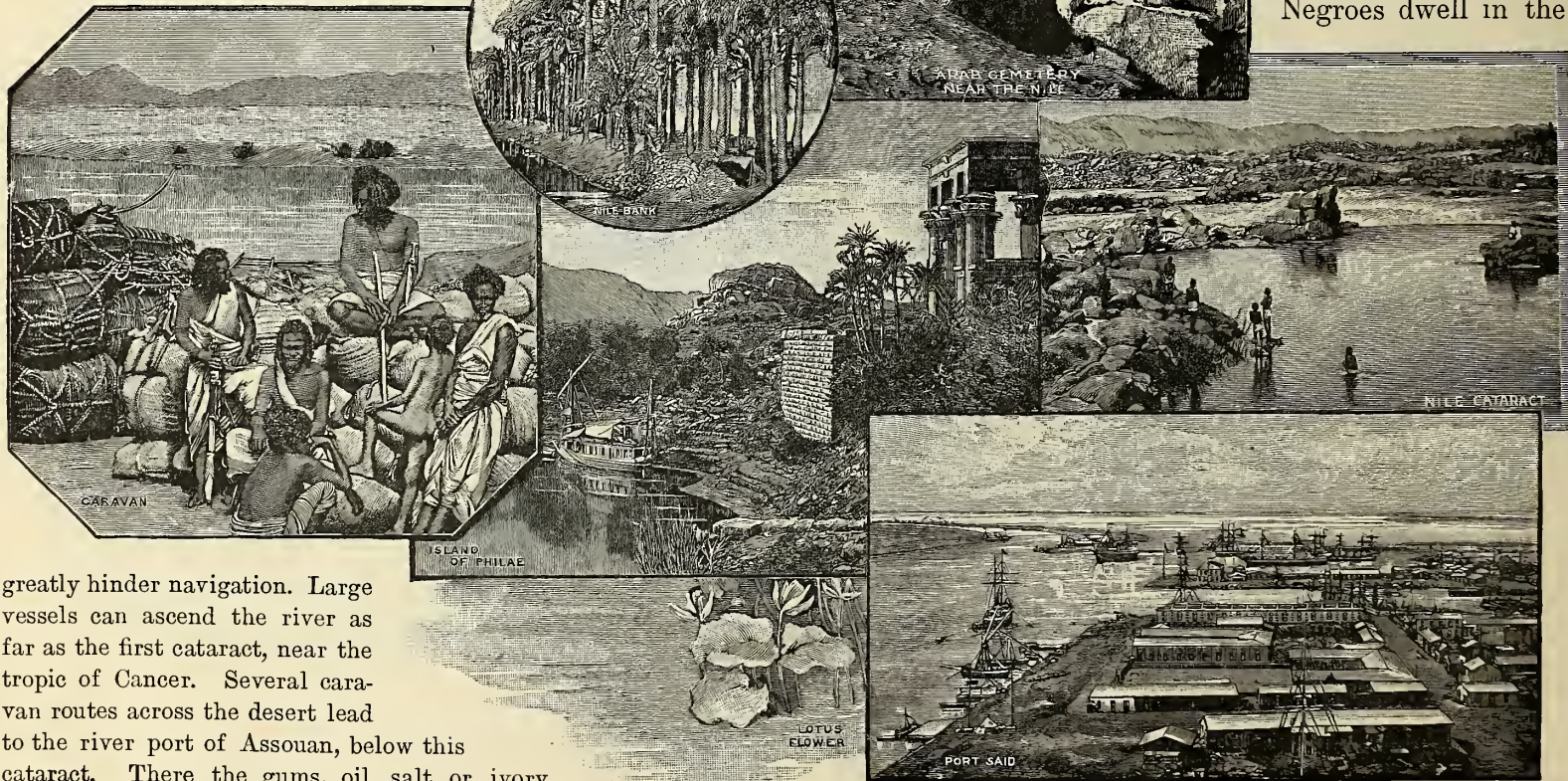
This river carries a large amount of rock waste down to the Mediterranean sea and there adds to a great delta which has been growing for ages. When the Nile is flooded, it pours into the sea nearly five times as much water as when the flood has gone down.

The Nile river is about as long as the main stream in the Mississippi basin. The course of the Nile, however, is broken by rapids or cataracts which

The Mississippi river becomes broader and deeper as it flows onward, but the Nile becomes narrower and shallower in its lower course. Can you tell why?

In harvest time on the fertile delta and flood plains of the Nile may be seen cotton, sugar cane, rice, wheat, corn and other products like those raised on the Southern plains of the United States. Cattle and sheep also graze in the pastures of the Nile valley.

The flood plains of the lower Nile are one of the most thickly settled parts of the world. Most of the people belong to the white race, although their skin is very dark. Millions of Negroes dwell in the



Entrance to Suez Canal.

greatly hinder navigation. Large vessels can ascend the river as far as the first cataract, near the tropic of Cancer. Several caravan routes across the desert lead to the river port of Assouan, below this cataract. There the gums, oil, salt or ivory carried for hundreds of miles by camels, can be placed on boats and floated down to the large cities in the delta plain. Small vessels can be hauled over the first cataract and can then sail up to the second. There are many boats on the river between the upper cataracts.

How different is the basin of the Nile from that of the Mississippi! One has only a narrow strip of fertile land with wide deserts on either side. The other also has its fertile flood plain, but this is bordered by uplands of wonderful fertility.

How different are the rivers in these great basins! The Nile is open to large vessels for only about five hundred miles in a direct line from its mouth, and within that distance there is not a single tributary. The Mississippi and its branches afford thousands of miles of water navigable from the sea and leading to almost every part of the wide fertile plain.

basin of the upper Nile, in middle Africa.

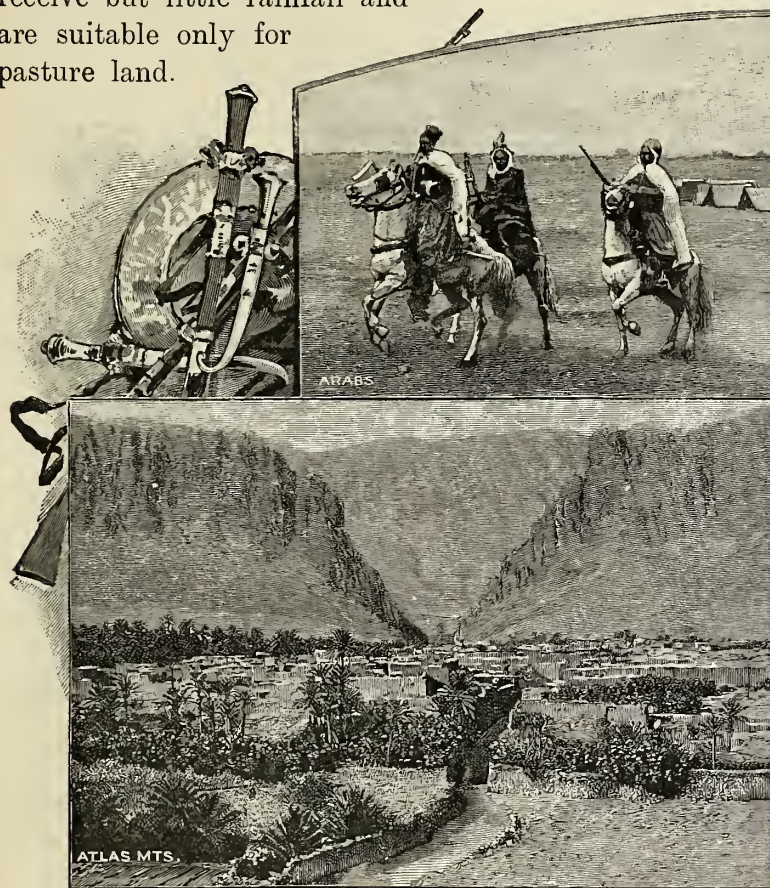
Cairo, the trade center of the delta and flood plains of the Nile valley, is the largest and most important city in all Africa. It is a very old city.

In Lower Egypt are found the greatest monuments ever built by man. They are known as *pyramids* and are the tombs of the ancient kings. See picture on page 89. Several pyramids can be seen from the citadel of Cairo. One of these is now 450 feet high, and the length of each side of its square base is about 750 feet, or nearly one seventh of a mile.

The *Sphinx* shown in the same picture is not far from Cairo. This curious monument, showing a man's head on a lion's body, is nearly 200 feet long, and was mostly carved from a ledge.

77. Northern Africa and the Sahara Desert.

The highland which includes the Atlas mountains consists of long and narrow plateaus with border ranges. These plateaus, like other high plains between ranges, receive but little rainfall and are suitable only for pasture land.



An Arab City near a Water Gap.

The northern slopes of this highland receive rains from the westerly winds in winter. These slopes are fertile and produce cereals and fruits like those of southern Europe. The slopes of the highland which face inland are almost barren, because they are on the lee side of the mountains.

Most of the people in the lands on the north of the Sahara desert have dark or swarthy skin, but they belong to the white race.

The *Algerian*, or native of Algiers, shown in the picture on this page, is a fine example of the north African people.

Small streams from the Atlas mountains flow into the border of the desert, and even after they dwindle away, their ground water supplies many wells that have been sunk in that dry region. The water from these wells is used for irrigating groves of date palms, — the chief food plants of that district. Thousands of wells have been sunk along the border of the desert south of the Atlas range.

The desert of Sahara, though about as large as the United States, supports only about one fortieth as many people. Most of these live near the fertile places, or *oases*, where there are wells or natural springs. The

desert tribes are mostly wandering Arabs, or *Bedouins*, and Berbers. Although their skin is swarthy they belong to the white race. See picture of *Bedouin* on next page. Many Negroes also live in some portions of the great desert lying northward from lake Tchad.

A few low mountain ranges rise in the desert. Rain occasionally falls on these ranges as the winds



Crossing the Sahara Desert.

rise over them, and small streams then flow into the lower desert lands. During the winter months the highest peaks in the desert are capped with snow.

In the middle and eastern parts of the desert, the surface consists largely of stony table-lands. Some of these are a mile high. They are swept by hot dry winds which blow away the dust from their stony or gravelly surfaces.

Near the desert mountains and table-lands are many springs around which date trees grow. Some grain also is raised there.

The western part of the desert of Sahara is mainly a great sandy region in which countless dunes form. Some of these are more than six hundred feet in height. Much less than half the great desert of Sahara is a sandy waste.

Violent winds, like the squalls of our thunderstorms but without rain or clouds, often raise great quantities of dust in the Sahara. These hot winds, called the *simoon*, sometimes darken the sky with dust. Caravans hardly survive the stifling heat and dust of the *simoon*. The camels crouch to the ground, and the men wrap their heads in their cloaks.

Along the southern base of the Atlas mountains, near their eastern end, is found a long depression leading from the Mediterranean sea into the desert. Some parts of this depression hold shallow lakes, as shown on the relief map. At one time it was thought that a large area in the desert could be flooded through the long depression, but more careful study has shown that only a very small area is below the level of the sea, while far the greater part of the desert is a plateau region.

The Sahara is the largest desert on the earth. This desolate region is too far south to receive rains from the westerly winds,



Algerian.



and too far north to be reached by the equatorial rain belt. Even along the Atlantic coast of the desert, there is no rain. The drying trade winds blow there almost all the year round. The winds are active in the daytime, but they generally fail after sunset.

Although hot in summer, the desert air, especially at night, is cool when the sun is far south.

The Sahara desert is

What lake receives the drainage of the interior region between the Niger and the Nile basins?

Sudan is wholly north of the equator but is within the range of the equatorial rains. They are heaviest, however, in the southern part, and decrease towards the border of the Sahara desert. Southern Sudan therefore is

heavily forested, but northward the trees give place to open grassy plains which merge into the desert. The greater part of the country is fertile.

Eastern Sudan is in the Nile basin. See lesson 76.

The greater part of central Sudan is in the basin of lake Tchad, — the largest basin of interior drainage in Africa.

The main stream which feeds lake Tchad flows from the rainy forest country far in the southeast. Very little is known about the region in which the stream rises.

Lake Tchad is shallow and its banks are low. As the season changes from wet to dry, the lake varies greatly in size. In the rainy summer season it

becomes larger than lake Superior and then during the dry winter months shrinks to about one fourth its size. As the lake becomes smaller, its borders form swamps or marshes covering many thousand square miles.

When lake Tchad is swollen by rains, it overflows towards the northeast. The overflow follows a *wady*, or river channel that is dry except in the wet season. The wady from lake Tchad leads into the desert, where the water evaporates or disappears in the sand. This overflow keeps the water of the lake almost fresh.

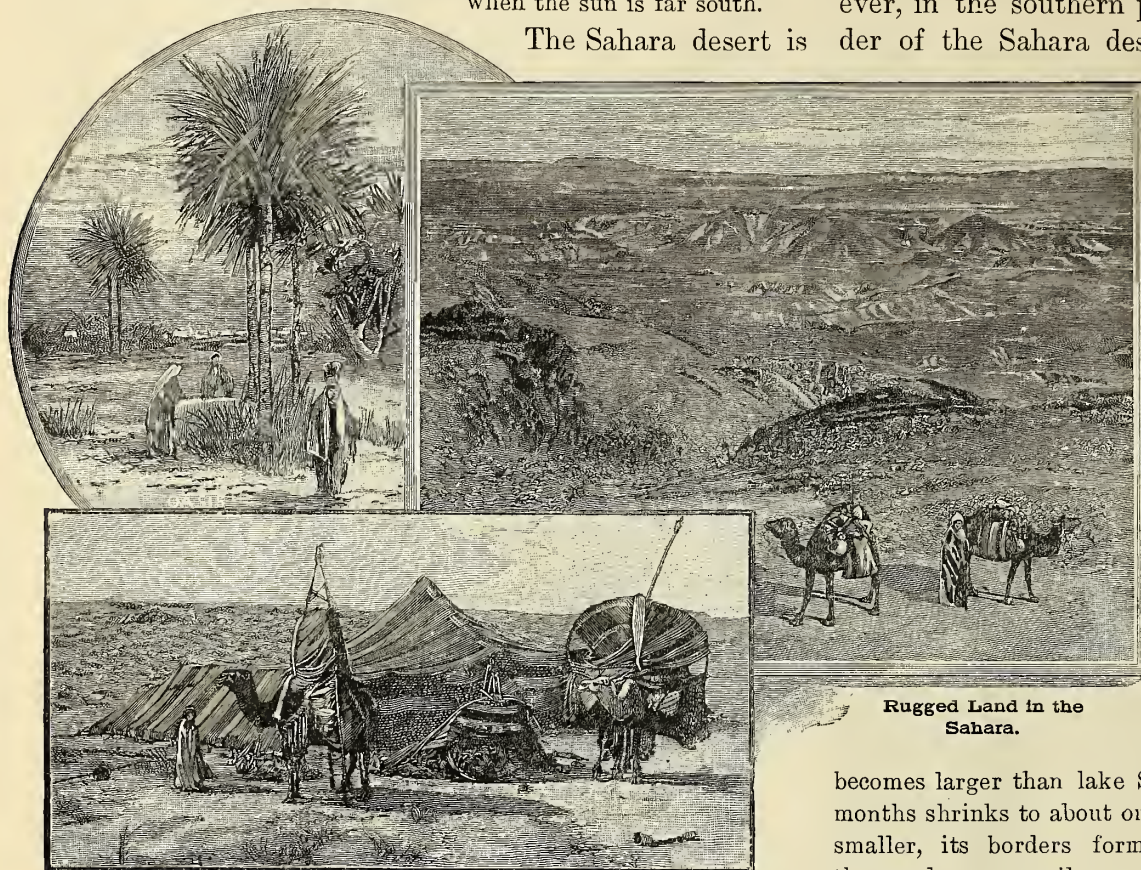
There are many large towns and villages in the park-like district south of lake Tchad, and the region is thickly settled. Most of the people are Negroes.

These people are well advanced in many respects beyond the savage state, for they carry on an extensive trade and have some manufactures.

The towns near lake Tchad are trade centers where caravans meet. The ivory tusks of elephants form a leading article of export. Camels and horses in large numbers are reared for market. Grain and cotton are important products.

The so-called *Kong mountains* are chiefly the southern border of a much-worn plateau that rises in broad terraces from the coast of the gulf of Guinea and spreads far northward. The inland slope of this old plateau is in the basin of the Niger river.

The Niger basin is thought to be about three fourths as large as that of the Mississippi. The Niger river rises in the hilly district near the southwest end of the old plateau region. After making a great bend northward,



Bedouin Camp in the Sahara Desert.

Rugged Land in the Sahara.

part of a great belt of arid regions whose rainfall is so light that they have no overflow to the sea. The desert belt crosses Arabia, Iran, the Middle Basin and the Gobi region. A wide branch of this barren belt spreads northward around the Aral and Caspian seas.

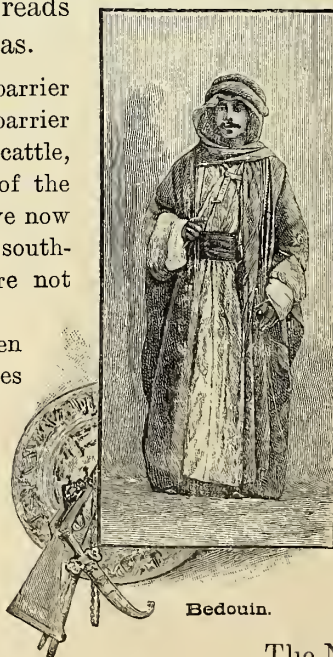
We have studied about the great mountain barrier of the Himalayas. The Sahara also forms a barrier between northern and southern Africa. No cattle, horses nor sheep are native to the lands south of the vast barren region, but many of these animals have now been taken there. On the other hand, middle and southern Africa have many kinds of animals that are not found north of the desert. See page 116.

We have read that the Himalayas rise between the yellow and the white races. The Sahara lies between the homes of the white and the black races, although large numbers of the white and the black people have now mingled in the border lands of the desert and in the desert itself.

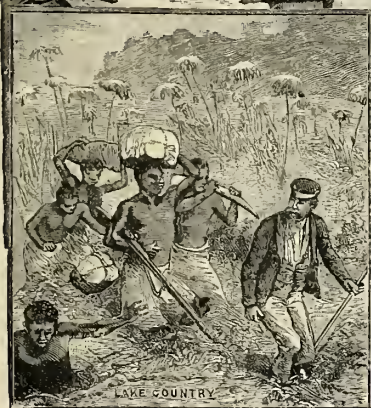
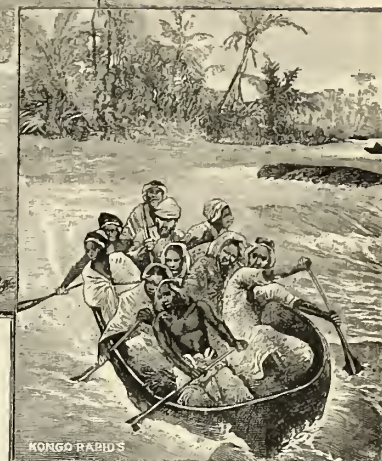
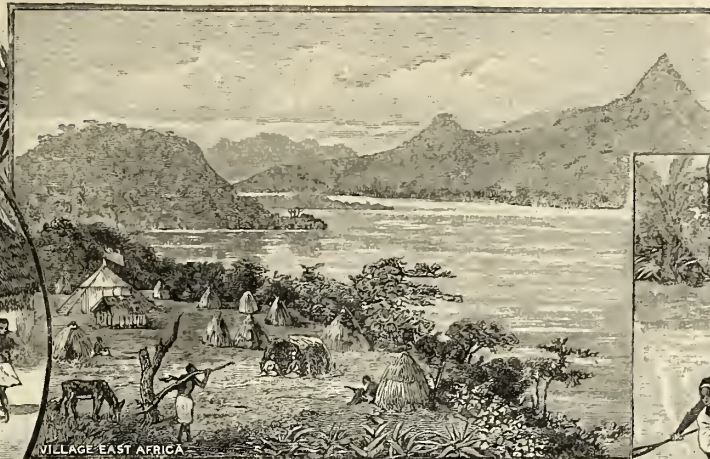
78. Sudan.

A wide belt of country south of the Sahara desert is known as *Sudan*. It extends from the Atlantic coast to the highland of Abyssinia.

What gulf is south of western Sudan? What large river from Sudan flows into this gulf?



Bedouin.



and flowing for several hundred miles in the Sahara desert, the river turns southward and enters the sea through the largest delta in Africa.

The greater part of this delta is covered with forests and coarse grass. Small steamers from the sea can go a few hundred miles up the Niger,

before their progress is stopped by rapids; but the steamers can ascend the Benue branch to a point about 600 miles from the river mouth. No other river in tropical Africa is navigable for so great a distance inland from the sea.

Timbuktu, on the Niger, was once an important center of the caravan trade, but it is now far surpassed by towns farther east, such as Kuka and Kano which together have a population of about 100,000. *See map of Africa on page 181.* Each year many camels cross the desert, carrying ivory, ostrich feathers and gold dust from the basin of the Niger. The caravans return southward with cloth, trinkets and salt.

The coastal regions south and southwest of the Niger basin are reached by the equatorial rain, and most parts of them are forested. White people from Europe have many trading stations along this coast. The products are like those of the Niger basin.

The western portion of Sudan, like nearly all other portions, is thickly settled. Most of the people are Negroes, but many others belong to a very dark branch of the white race, known as *Hamites*.

The Kamerun mountains near the head of the gulf of Guinea consist of one large volcanic peak and many small ones.

79. The Kongo Basin.

The Kongo basin occupies the greater part of middle Africa and lies west and southwest of the upper Nile basin. Almost all the Kongo basin is a plateau with a general slope westward. The average height of the region is about half a mile above sea level.

The Kongo basin is mainly in the southern portion of the equatorial rain belt and parts are heavily wooded. This

basin is thought to be the second largest in the world.

The Kongo, like the Nile, rises in the lake region of middle Africa. One branch of the Kongo is the outlet of lake Tanganyika. Other branches flow from smaller lakes farther south.

In dry seasons the overflow from lake Tanganyika ceases, and the channel of the outlet is overgrown with reeds. The lake water is therefore slightly brackish.

East of the lake region rise two volcanic peaks, the highest mountains in Africa. They are named Kenia and Kilimanjaro. The former is about as high as Mt. St. Elias. The summit of Kilimanjaro is a little higher than that of Mt. Logan.

There are rapids and falls in the Kongo river at the place where it cuts its valley down from the plateau to the low and narrow coastal plain. These falls prevent vessels going far inland from the sea. Above the falls, the river is at all times wide, and during the rainy seasons it often spreads for miles from bank to bank.

Small steamers have been carried overland past the falls and now navigate the upper river. There they find an open water way for thousands of miles along the trunk stream and its branches.

The Kongo pours more water into the sea than any other river in Africa. For several miles out from the mouth, the fresh water of the great stream scarcely mingles with the salt water of the ocean. This large flow from the river shows how heavy the rainfall in the Kongo basin must be.

The vegetation of the Kongo basin is very luxuriant. Among the useful food plants are the cassava, the yam, the plantain, corn and sugar cane. Palm oil and cotton are other important products.

Palm oil comes from the seeds of certain kinds of palm trees. The seeds are crushed and then boiled or melted down, and are thus made to yield a valuable oil.

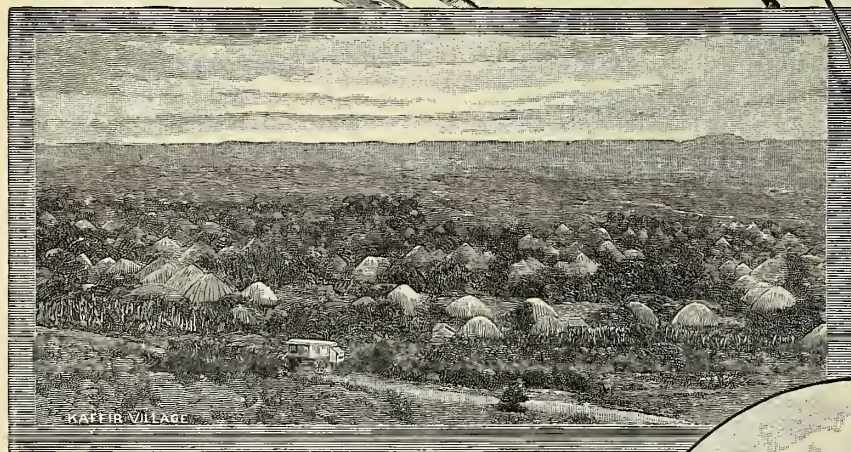
The yam is a large fleshy rootstock resembling the sweet potato. In nearly all hot parts of the world, yams are a common article of food.

Plantains and bananas are almost alike, but the pulp of the latter is the more delicate.

What have you read about cassava? *See lesson 48.*

The basin of the Kongo is the home of many large and fierce animals. Among these are the chimpanzee, the crocodile and the rhinoceros. Every year thousands of elephants are killed there for their tusks.

The natives of the Kongo basin belong to the black race. Their number runs far into the millions. They live mostly in small towns and villages. Many of the huts of these black people are made of grass, woven into mats and fastened to poles.



White people have established many trading stations along the coast and on the upper Kongo and its tributaries. These traders purchase ivory, palm oil and other products.

The two great forested river basins of the torrid zone differ widely in many respects. The Amazon basin slopes to the east; the Kongo, to the west. The one is mainly a lowland; the other, a plateau. The former has twenty-five thousand miles of streams navigable from the sea; the latter has only ninety miles. The Amazon basin is sparsely peopled by scattered tribes of Indians; the Kongo basin supports tens of millions of Negroes.

In what respects do these basins resemble each other?

80. Southern Africa.

In the Zambezi basin are found the same changes from forest to grass land and then to desert, as in Sudan. The forests of the Zambezi basin are densest in the northern part, where the equatorial rains fall in summer. The southern part of the basin reaches the Kalahari desert.

The Zambezi is the largest African river flowing into the Indian ocean. This stream is thought to drain an area equal to about two thirds that of the Mississippi basin.

Locate the Victoria falls. These falls mark the place where the river leaves the great inland plateau. At the falls the Zambezi river is a mile wide. The water plunges into a chasm about 400 feet deep, and then runs out through a narrow zigzag gorge.

The Zambezi has built a large delta. The distributaries which cross it are generally barred with sand, but vessels that can float over the bars may ascend for about three hundred miles.

The natives of the Zambezi basin are savages of the black race. They raise grain and have herds of cattle.

The Kalahari desert is in the path of the trade winds from over the Indian ocean, but those winds lose most of their moisture on

the seaward slopes of the eastern mountains. Very little rain falls on the inland desert plains.

Bands of small people called *Bushmen* live in the Kalahari desert wherever there are tufts of grass upon which antelopes may feed. The Bushmen have no gardens but live by hunting the antelopes. These small savages belong to the Negro race.

The main sources of the Orange river system are in the eastern coast ranges of southern Africa. The greater part of the Orange basin is very dry.

Even the main river is too shallow for steamers, and many of the branches flow only during the wet season. There is good pasturage in the eastern part of the basin, but the middle and western parts are little more than a desert.

The southern part of Africa, including nearly all the region south of the Orange river and a small area north of that river, is known as *Cape Colony*. It is crossed from east to west by a rugged plateau that forms the southern end of the great African highland.

The seaward slopes of this plateau, like those of the Atlas highland, have winter rainfall and summer drouth. During the wet months, when the westerly winds prevail, the short streams swell to torrents, but in the dry season they dwindle away.

Wheat and other kinds of grain are raised on the seaward slopes of Cape Colony, and many cattle, sheep and ostriches are reared there. Wool, ostrich feathers and hides are valuable exports.

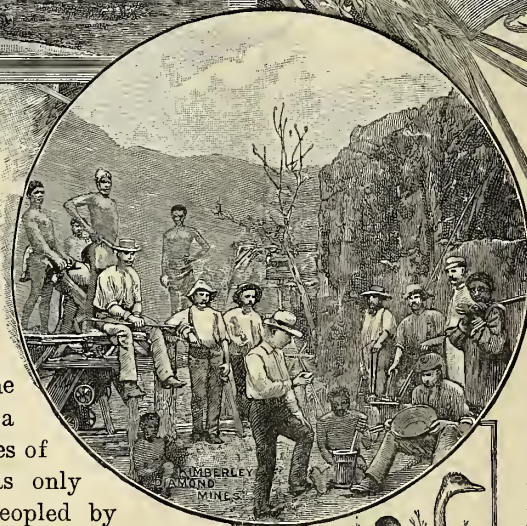
The richest diamond mines in the world are at Kimberley. The value of the diamonds is greater than that of all the other exports of Cape Colony.

The native people of this country belong to the Negro race, but white people from the British Isles control the land and form about one fourth of the population. Cape Town is the chief port in southern Africa.

Near Cape Town rises a huge flat-topped rock called *Table mountain*. Southward from this rocky mass extends a small peninsula ending in the well-known cape of Good Hope.

Madagascar, the largest island off the coast of Africa, is about two and one half times as large as Great Britain. Its coastal region is mostly low and unhealthy, but the interior consists largely of grassy or wooded plateaus.

The leading exports are hides and India rubber.



AUSTRALIA.

81. Australia.¹

Australia, the smallest of the continents, is about equal in area to the United States, not including Alaska.

This small continent consists mainly of a half-circle of low plateaus and ranges, around a wide central desert plain. Except in the southeast, the ranges are little more than hills. The Australian Alps are about equal in height to the ranges of the Appalachian highland.

The Pacific slope of Australia is in the path of the trade winds. The seaward slopes of the Australian Alps and the Blue mountains² are therefore well watered. After crossing the mountains, these winds can give very little moisture to the basin of the Murray river. The streams of this basin are fed chiefly by rains in the highland on the southeast.

In what season do the equatorial rains reach northern Australia? See maps on page 22. What winds carry rains to the southern coast? What other continents receive rains from the same belt of winds?

When the equatorial rains of the southern summer occur in the campos of Brazil and in the Kongo basin, they reach the northern part of Australia also. In that season the drying southerly winds, moving towards the heat equator, pass over the plain of middle Australia. During the southern winter, the winds blow outward from this continent and therefore yield little rain. Thus the middle plain is almost rainless.

The basin of the Murray river is thought to be about one third as large as that of the Mississippi. The Murray river and its branches form the only large river system in Australia, and yet even the main stream of this system is not deep enough to float large sea-going vessels. After heavy rainfall in the mountains, small vessels can

ascend the Murray and some of its branches; but in seasons of drouth the rivers become too shallow for shipping, and some of them are little more than chains of ponds or shallow pools.

Inland Australia has a number of large lakes with no outlet to the sea. These lakes are fed by long shallow streams from the border ranges. During the dry seasons, many of the lakes dwindle away to salt marshes.

Most of the Australian trees are evergreens. Some of them shed their bark instead of their leaves, and many turn the edges of their leaves to the sun.

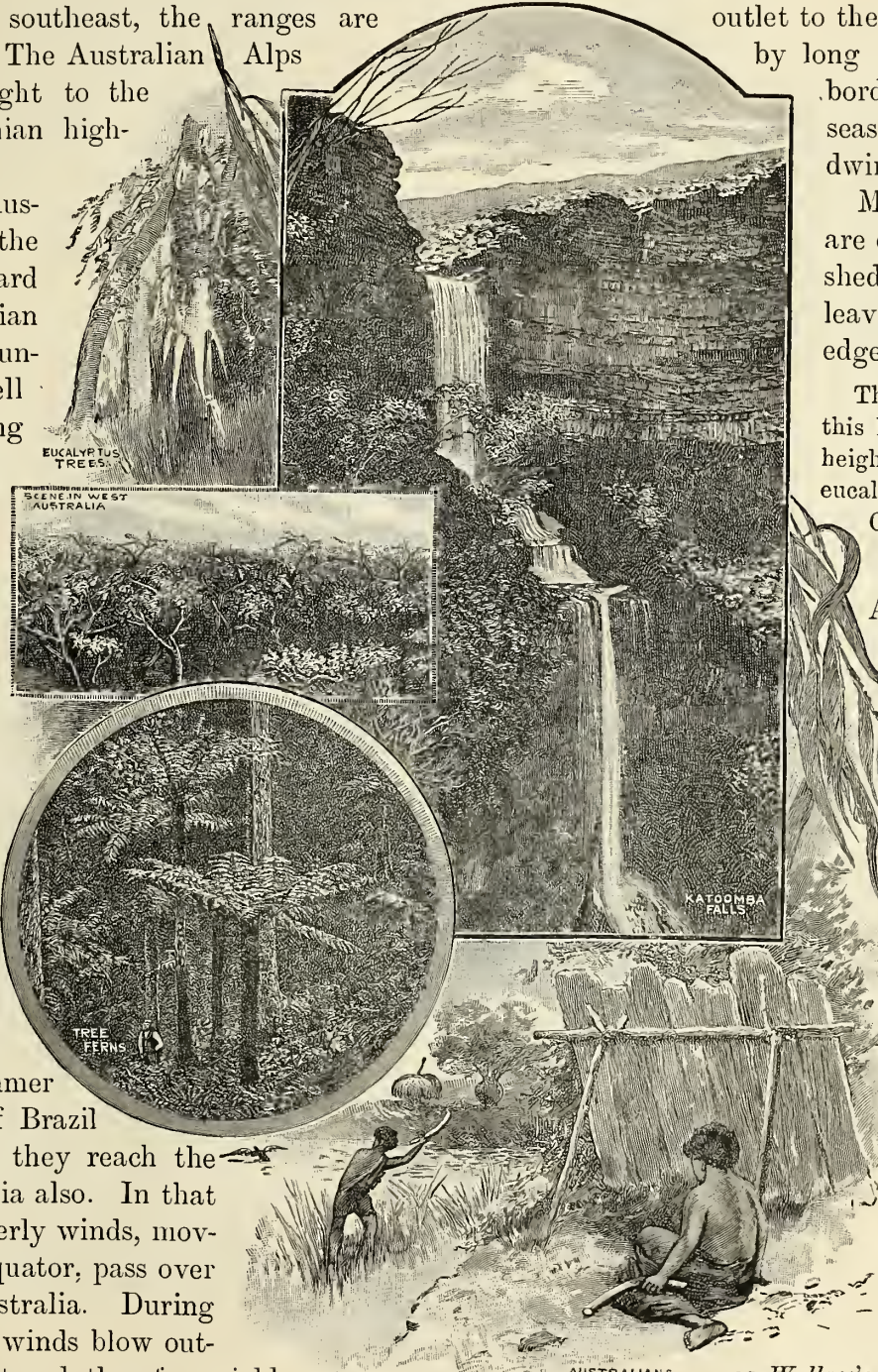
The giant *eucalyptus* trees are of this kind. They grow to a great height. Several species of Australian eucalyptus trees are now common in California.

The largest forests in Australia are in the eastern highland region, where the rainfall is heaviest. Wide areas of the inland plain are covered with coarse scrubby bushes.

The wild animals of this continent differ widely from those in the other continents. None of the kinds of large animals in the other continents which we have studied are native to Australia.

Just east of Java are two small islands named *Bali* and *Lombok*. They are separated by a narrow strait that forms part of a deep-water line known as *Wallace's line*. It runs northeast past Celebes and divides the islands of the East Indies into two groups whose animals differ widely. Those on the side of the line nearest Asia resemble the animals of that continent, while those on the other side of the line resemble the animals of Australia. For this reason, it is believed that some of the islands were at one time joined to Asia, and the others to Australia. This is the line of deep water referred to on page 73. See map on page 111.

Australia has many animals with pouches, or folds of skin, on the under sides of their bodies. Some animals carry their eggs in these pouches. Others carry their helpless young, till they are strong enough to take care of themselves.



¹ The Map Studies on page 97 are to precede this lesson.

² The Katoomba falls are in the Blue mountains.



RELIEF MAP OF AUSTRALIA.



83. New Zealand and Other Islands.

A little more than a thousand miles southeast of Australia lie two large islands and several small ones, forming the group known as *New Zealand*.

The mountains of southern New Zealand, rivaling in height the Rocky mountains, receive heavy rainfall from the westerly winds. Great glaciers descend the slopes of the New Zealand mountains.

Many parts of these islands are forest-clad. Among the trees are lofty pines and large tree-ferns.

The natives of New Zealand belong to the brown race. Their number is small compared with that of the white people

The kangaroo is the best known of the pouched animals. It often grows to the size of a man. This animal has very strong hind legs and moves swiftly by leaping. Kangaroo skin is tanned and thus made into leather. This is used in the manufacture of shoes, satchels and other articles.

Lesson 105 describes some of the other curious animals of Australia.



Samoa Princess.

The natives of Australia belong to the black race. They are savages and live wretched lives. The total number in all the tribes is only about thirty thousand.

The fertile portions of the continent are inhabited by white people, mostly from the British Isles. The white men have driven the savages from these fertile lands. The population of Australia is only about one twentieth as great as that of our own country.

Neither sheep, cattle, wheat nor corn are native to Australia, yet they now form the chief sources of wealth there. The continent is famous for its gold mines,—mostly situated in the hilly belt along the Pacific margin.

82. Map Studies.

Describe Australia,—its size, its place among the oceans, its direction from the other continents, its position in the heat and wind belts, its highlands and lowlands, its rivers, its coastline.

In what respect is Australia like Africa? In what respect does Australia differ from North America? Locate New Guinea; Tasmania; New Zealand; the Fiji and Samoa islands.



Fiji Warrior.



Cocoanuts.



Cocoanut Tree.

who have in recent years chosen those islands for their home.

Sheep-raising is the chief industry in New

Zealand, although there were no sheep on the islands when the white men first settled there.

New Guinea. This island is about three and one half times as large as Great Britain. Except along some parts of the coast, New Guinea is in the possession of black people who do very little to develop its resources, although the lowlands of the island are fertile.

Coral and Volcanic islands. Cocoanuts, breadfruit, fish and turtles are almost the only food of the natives on most of the small Pacific islands.

Many of the low islands in the Pacific are of coral origin. Some are in the form of long bars, or *reefs*; others take the shape of rings, or *atolls*, inclosing lagoons.

The higher islands far out in the Pacific are volcanoes. Many of these

are still active, but others are extinct. Coral reefs, called *barrier reefs*, surround most of the lofty islands.

There are about 300 islands in the *Fiji group*, but only two of these are of fair size. The most important is Viti-Levu. These islands are chiefly of volcanic origin. They are rugged and mountainous.

Before white men settled on some of the islands, the Fijians were cannibals, as were also many other groups of Pacific, or "South Sea," islanders. The custom of eating human flesh has not wholly disappeared from all the islands.

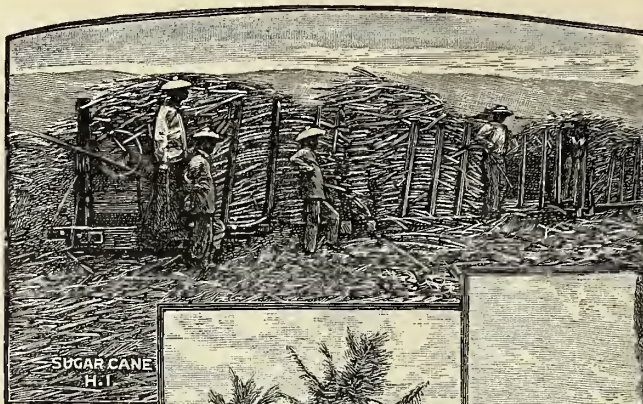
The Fijians have strong and well-built bodies, as shown in the picture on page 97. As a race, they are fierce and warlike.

Southeast of the Fiji group are the *Friendly islands*, of which Tonga is the largest. Since white people first went to these islands to teach the natives, most of them have learned to read.

The *Samoa islands* are northeast of the Fiji group. *Apia* is the chief town. The Samoans are very skillful in using canoes, and for this reason their islands are often called the *Navigator's islands*.

Northeastward from Papua are several groups of islands which together take the name of *Micronesia*, meaning *small islands*. Among these groups, the *Ladrones* are

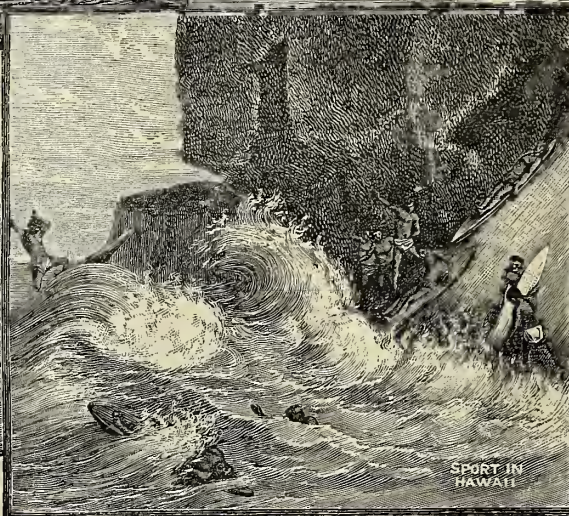
They carry provisions, but depend on rain for drink. Perhaps the lonely islands far out in the Pacific were in many instances first peopled by castaways who while out in their boats were driven from their homes by winds and ocean currents.



SUGAR CANE
H.I.



SAMOAN
VILLAGE



SPORT IN
HAWAII



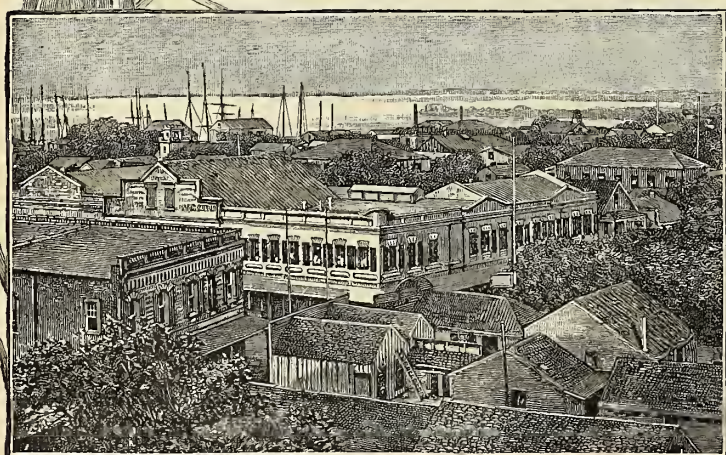
ATOLL



TREE HOUSE
PAPUA



TONGA GIRLS



Honolulu, Hawaiian Islands.

mostly of volcanic origin; but the Caroline, Marshall and Gilbert islands are chiefly the work of coral polyps.

The savages who dwell in these islands may be grouped with the people of the brown race; but in language and customs, the Micronesians differ from the natives of the large islands of the East Indies.

The natives of the Marshall islands are very skillful in sailing canoes. These islanders often take voyages lasting several months.

The *Hawaiian islands* are near the tropic of Cancer about 2000 miles southwestward from San Francisco. These islands were built up by volcanic action, from the deep bottom of the middle Pacific. They form the most important group among the many islands which rise far out in that ocean.

The natives of the Hawaiian islands belong to the brown race. Many people of the white and the yellow races also have settled there.

A few years ago the white settlers took charge of the government. At their request, the islands were (in 1898) annexed to the United States. See *Hawaiian supplement*.

The lowlands of the islands are fertile. Among the products are sugar cane and rice. Nearly all the Hawaiian foreign trade is with the United States. In exchange for sugar, our country sends provisions and clothing.

Hawaii is the largest of the group of eight islands. Honolulu, the chief city, is on the island of Oahu. This city is reached by steamships from San Francisco.

The Kilauea crater, in the Hawaiian islands, is not very high, but it is the largest active crater known. The floor of this crater is a lake of hot lava which at times rises above the rim and runs off in great streams. The Mauna Loa crater, near that of Kilauea, pours forth more lava than any other volcano yet found.

RACES OF MEN.

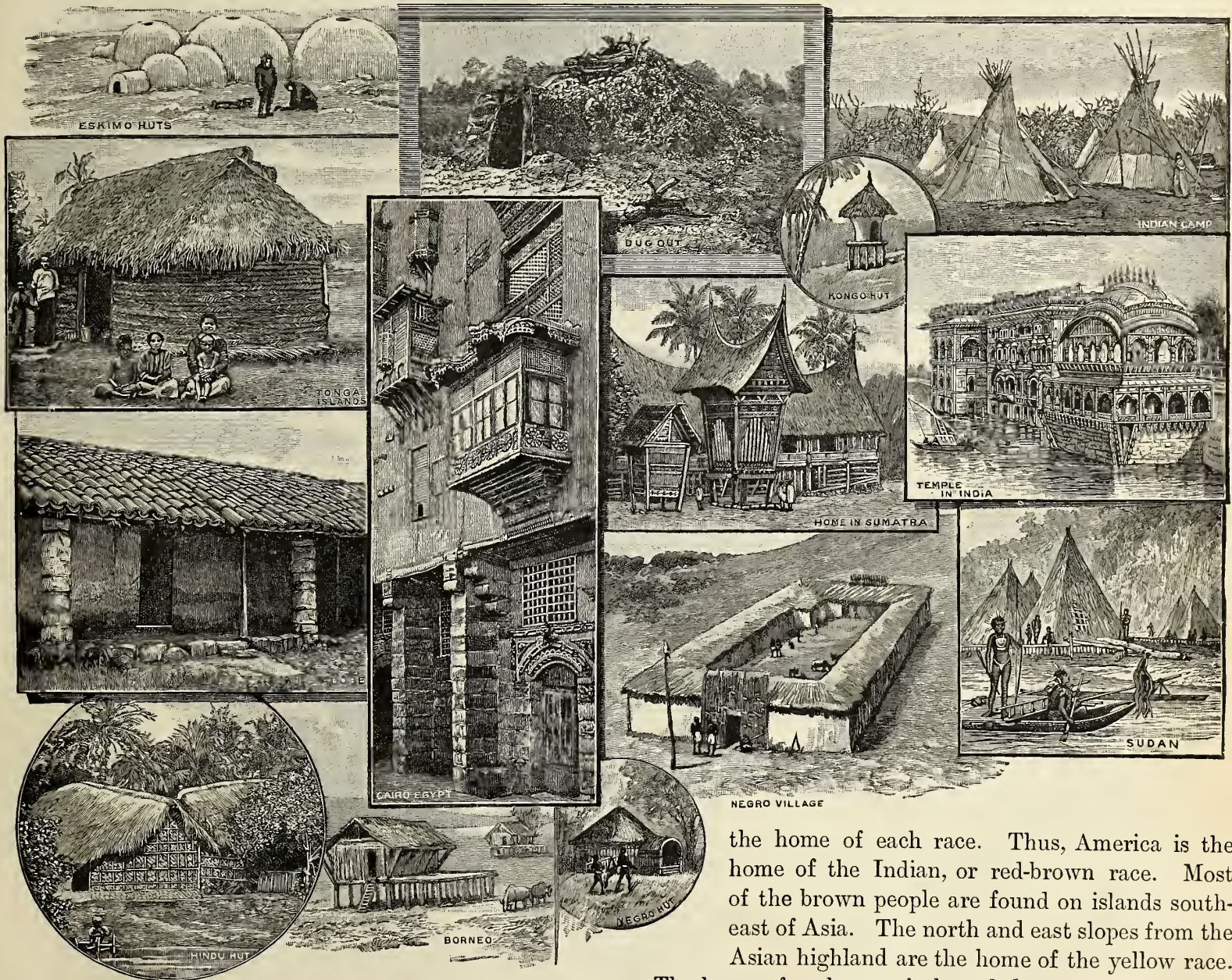
84. Homes of the Races.

We have seen that the people in various parts of the earth do not all look alike, do not eat the same kinds of food, do not wear the same style of clothing, nor live in the same kinds of houses.

Near the Kongo river there are black savages living in straw huts, with no books, no lamps, no rifles.

The people of the earth are divided into five groups, or *races*. The people of one race differ from those of the other races in color, in size, in the shapes of their skulls, in kinds of hair, in language, and in other respects.

In some places we shall find that people of two or more races live side by side, but certain lands are known as



The Indians in the selvas spend their time in fishing and hunting. They wear but little clothing and use blowguns and bows and arrows.

On the islands southeast of Asia, brown people live in bamboo huts, and raise rice, coffee and spices. There the boys make baskets, and the girls weave cloth.

We have read about the Chinese with their long braided hair and their slanting eyes. We have learned that they weave fine silk and pack boxes of tea.

We know that white people live in our own country and in many other countries. We have seen their books, railroads, ships, workshops and homes, or pictures

the home of each race. Thus, America is the home of the Indian, or red-brown race. Most of the brown people are found on islands south-east of Asia. The north and east slopes from the Asian highland are the home of the yellow race.

The home of each race is bounded on nearly all sides by oceans, deserts or lofty highlands. The desert of Sahara lies between lands of the black and the white races. The Himalaya mountains separate homes of yellow and of white people. The land of the Indian is bounded on all sides by the sea.

No race is now limited to its original home, for the people of each race have spread more or less into the lands of other races. Thus, white people are now found in nearly all settled parts of the earth.

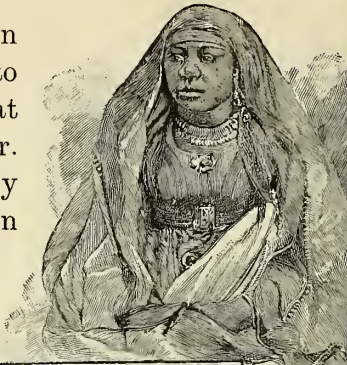
There are about 1,500,000,000 people in the world.

85. The Negro or Black Race.

In what part of Africa do people of the black race live? See map on page 102. What large river basins are in this region? What desert is on the north? What oceans are on the east and west?

The natives of middle and southern Africa vary in color from black to brown. Most of them have broad flat noses, thick lips and black frizzly hair.

The true Negroes are found in nearly all parts of Sudan, but the people in the tribes southward from Sudan to the cape of Good Hope also belong to the Negro race.



Negress.



Australians.



Negro Children at the Paris Exposition.

Most of the tribes living south of Sudan form a large branch of the black race, known as the Bantu people. Their language does not resemble that of the Negroes of Sudan, but no other marked difference has yet been discovered.

The Kaffirs of southern Africa belong to the Bantu branch of the Negro race. One of the pictures on this page shows a common form of Kaffir hut.

The Negroes in some parts of Africa build houses, weave coarse cloth, and make spears, bows and shields. Many of the black people raise cattle, and plant grain. If the long rivers of Africa were open to ships from the sea, the savages might more easily learn how the white man dresses, prepares food, tills the soil, uses books, and defends himself.

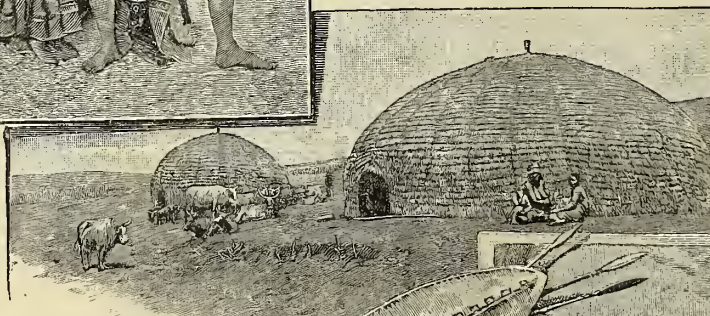
Millions of black people have been taken from their homes in Africa and sold as slaves, but the slave trade has now been almost stopped. The climate of their native land fitted the Negroes to work in the low and hot regions of the earth. Many of the people of Brazil, the West Indies and the southern plains of our own country are free descendants of African slaves.

about thirty thousand in all the tribes. These are thinly scattered around the continent, chiefly within about two hundred miles of the coast. The Australians are savages of very low grade. They wear but little clothing, and tattoo the skin.

One of the native weapons is the *boomerang*. This is a curved stick which may be thrown in such a way that it will return to the thrower. Wooden spears and stone hatchets also are used.

The savages of Papua, or New Guinea, belong to the black race.

We know very little about the Papuans. They paint their bodies and go about almost naked. The tribes of the inner part of the island are said to be very fierce.



Kaffir Huts.



Kaffir Boy.

Sudanese Woman.

The number of people in the black race is about 150,000,000,—one tenth of the people on the earth.



Kaffir Girl.

86. The American or Red Race.

This group is made up of Indians,—the native tribes of America.

Most of the Indians have high cheek-bones and straight black hair. Their skin is reddish-brown or copper color.

The Indians often paint their faces and bodies in red, and the early white settlers in North America called them *red men*. The Indians called the white men *pale-*

At one time the red-brown savages roamed over nearly all parts of the United States, but most of them were



Indian Types.

in the eastern half of the country, where game was abundant and where corn could easily be raised. The women planted gardens of corn, and the men spent their time hunting deer, bison and other animals.

The Indian taught the early white settler how to make soft shoes of deer-skin, and canoes of birch bark. From the savage the white man learned also how to make Indian corn grow in a forest. Rings of bark were cut from the trunks of the trees, or the bark was burned off, so that the sap could not flow. The trees soon died, and the corn could then ripen in the hot sunshine.

It is thought that about 250,000 Indians lived in this country when the first white settlers came to its shores. The number now remains about the same, with perhaps a slight increase.

Nearly all the Indians in the United States are now upon *reservations*. These are large tracts of land set apart as homes for the tribes. Only a few small tribes dwell east of the Mississippi river. The most thrifty

tribes are now living in the Indian Territory. See colored map of the United States on page 126.

About one third of the Indians in our country live in good houses of wood or of brick. They own large herds of cattle, and raise grain and fruit. In some places they have good schools.

Some tribes still live in tents. Others build *pueblos*,—houses or villages made of sun-dried bricks or of stone.

The native weapons are the bow and arrow and the tomahawk, or hatchet. The Indians shoot the arrow and throw the tomahawk with great skill. Many are now skillful with rifles.

The Indians had no horses before the Europeans came to America, but most of the savages are now excellent riders.

Millions of Indians live in Mexico, Central America and South America. Some of these are still savages, but many have mingled with people of the white race and have given up most of their savage customs.

In Mexico alone there are nearly 5,000,000 Indians, while as many more people in that country are part Indian and part white. Not one fifth of the inhabitants of Mexico are pure white.

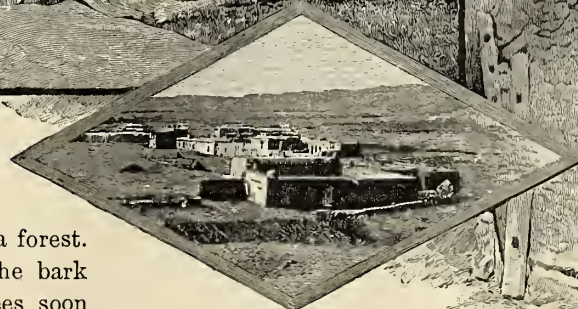
In all the countries of South America the races are greatly mixed. Most of the white people live near the coasts, but there, as well as farther inland, are found several million Indians and thousands of Negroes. The latter are mostly descendants of freed slaves.

The Indians of the interior of South America are savages of low grade and will doubtless remain so until that region is settled by white people. The Indians of the selvas are scattered in many small tribes.

When the first white settlers came to America, the Indians of Peru and Mexico had temples and other buildings of stone. They made cloth and worked in copper and gold, but the use of iron was not known to them. They built good roads and bridges.



Indian Camp.



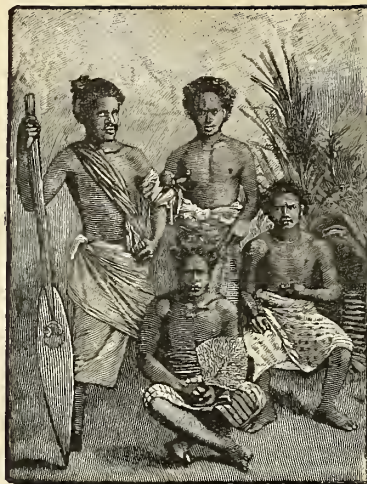
A Pueblo.

These people had made more progress than any others in the red race.

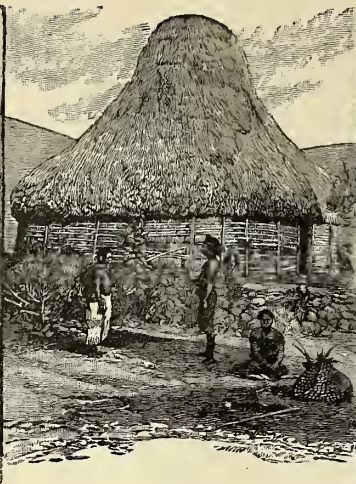


A Zuñi Water Carrier.

The American or red race includes only about one twelfth as many people as the black race. Most of the Indians live in the torrid zone.



Fiji Islanders.



Fiji Hut.



Malay Hut.



JAVANESE WOMAN



Maori Chief.

New Zealand.

87. The Malay or Brown Race.

In what part of the world is the brown race found? Name three large islands peopled by this race. What are some of the products of these islands?

What great island east of Africa is settled in part by people of the brown race?

The people of the brown race have coarse black hair, flat faces and short skulls. Many of them have strong and well-built bodies.

The brown people live mostly on islands, but their home includes also the Malay peninsula. Borneo, Sumatra, Madagascar and Java are the most important islands peopled by the brown race, but the region includes countless islands that extend for thousands of miles out into the Pacific.

Many people of the Malay race are yet savages. Others are traders or sailors. Many thousand people of this race inhabit the northern part of New Zealand. These are known as *Maoris*. They are brave and warlike, and have fought hard to prevent the white man from seizing their island home, but they have lost the largest and best parts of their islands.

The brown people raise a very large portion of the spices used in the whole world.

The brown or Malay race includes only about one fourth as many people as the black race.

Reference Tables.

Note: The statistics given below are to a very large extent mere estimates, not based on census returns. These tables are placed here for reference and not for memorizing.



Map of the Races.

TOTAL POPULATION OF THE WORLD . . .		1,500,000,000
Caucasian	690,000,000	
Mongolian	600,000,000	
Negro	150,000,000	
Malay	35,000,000	
American	12,000,000	
Mixed Races	13,000,000	
Christians		400,000,000
Buddhists		500,000,000
Mohammedans		200,000,000
Brahmanists		150,000,000
Jews		8,000,000
Pagans and others		242,000,000

88. The Mongolian or Yellow Race.

Where is the home of the yellow race?

Where is China? Japan? Siam? Anam? Siberia? *See colored map of Asia on page 175.*

What great river basins of Asia slope to the Arctic ocean?

The Japanese and the Chinese are famous for the weaving of silk and the making of porcelain. They have not yet learned the great value of coal, although there are coal beds in their countries. These people know very little about machinery for weaving cloth or for making iron and steel goods. In the great empire of China there are only a few miles of railroad.



Eskimo.

What large rivers of Asia flow into border seas along the Pacific coast? What race is found in most parts of these basins?

The people of the yellow and the brown races resemble one another. Most of them have coarse black hair, flat faces and short skulls.

The races differ slightly in color, in the slant of their eyes and in some other respects. The brown race is perhaps a branch of the yellow race. The American Indians also resemble somewhat the people of these two groups.

The yellow race is found in nearly all parts of Asia, on the north and east of the great central highland. The home of this race reaches from the Himalaya mountains to the Arctic coast, and also includes every river basin sloping to the Pacific coast of Asia.

Several centuries ago, the Chinese invented printing and gunpowder, but for many years that nation had made little progress. The Japanese have made more progress than any other people of the yellow race. They have good schools, and have been wise enough to adopt many of the customs of the leading white nations.

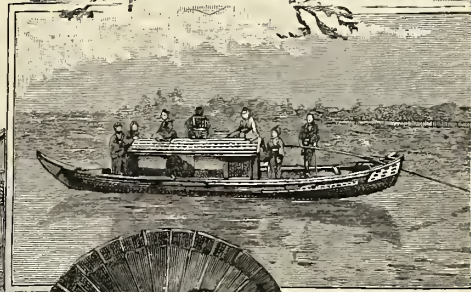


Japanese.

Many tribes of yellow people are found on the long Arctic slope of Eurasia.

Some of these live by fishing and hunting. Others keep herds of reindeer. These useful animals supply the people with food and clothing.

River Scene, Japan.



Many white people from Russia, in Europe, have moved eastward across Siberia and now far outnumber the yellow people in that land.

The Lapps and Finns of northwest Europe belong to the yellow race.

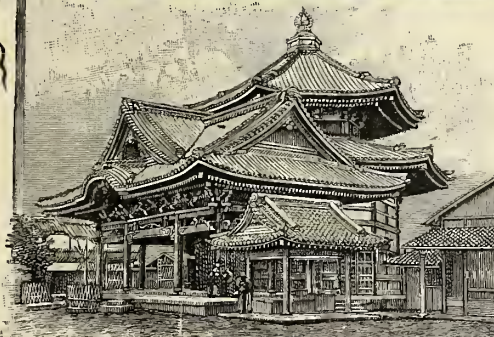
Small tribes of yellow people, called *Eskimos*, live along the Arctic shores of America.

There the summer is too short to ripen grain. Seals, deer, bears, fish, walrus and sea fowl supply food, clothing, heat and light.

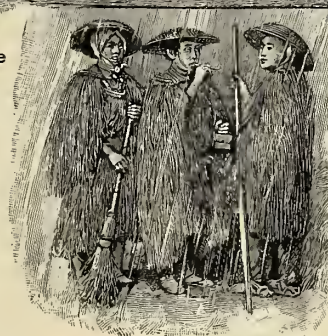
Most of the Eskimos live in rounded huts made of stones, skins or driftwood, and wear clothing made of the skins of seals, bears and birds. Hunting parties often make huts out of blocks of snow. In winter all the huts are buried in snow.

The yellow race includes more than one third of the people on the earth. About one fourth of the human race is found in China.

Japanese Temple



Japanese Raincoats.



Woman of Burma.

Chinese.



89. The Caucasian or White Race.

What race lives in Africa north of the desert of Sahara? What race occupies the greater part of Europe?

Between what races do the Himalaya mountains rise?

Where have white people settled in North America? In South America? In Africa? In Australia?

The home of the white race in the Old World lies between the lands of the black and the yellow races. It reaches from the desert of Sahara to the Arctic shore, and includes also the part of Asia lying south and west of Tibet. It is thought by many persons that ages ago there lived in central Asia a race of people now called *Aryans*. Large bands of these people roamed about in search of new homes.

Many of the Aryans, with droves of cattle, went into India.



RUSSIAN

Scotch
Piper.

Belgians.



Rhine Women.

Canada, southern Africa and Australia. The people in the peninsula

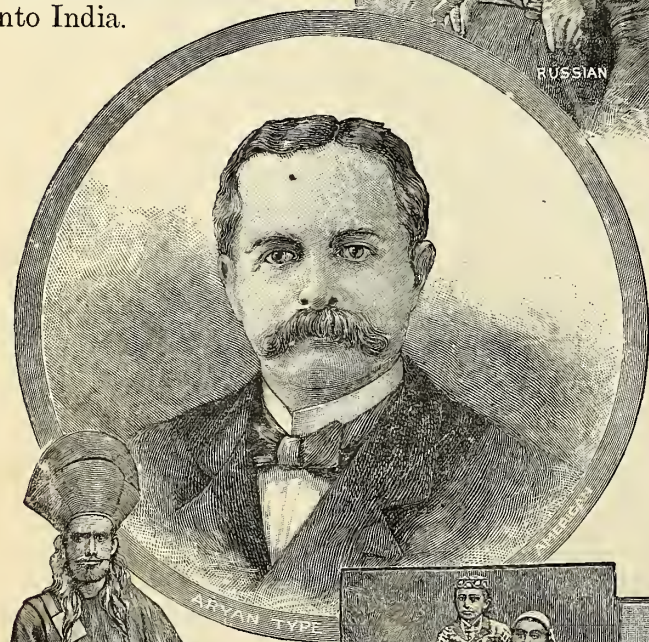
of Arabia and in the countries on the north of the Sahara desert, as well as in parts of the desert itself, are very dark, but most of them belong to the white race, though not to the Aryan branch. These are called *Semites*.

The Semites gave us our alphabet and system of Arabic figures. The Jewish people belong to the Semitic branch, but they are now scattered throughout the leading countries of the world.

Many of the tribes in the Sahara desert and along its eastern and southern borders form a still darker branch of the white race, called *Hamites*.

The Hamites differ from the black race in having thin lips, narrow noses and straight or curly hair. There are many Hamites in Sudan. They have for ages mingled with the Negroes of that land, and the races have become greatly mixed.

The white race outnumbers even the yellow race. These two great races together include all but about one seventh of the people in the world. There are nearly 700,000,000 people in the Caucasian race.



Kashmir Soldier.



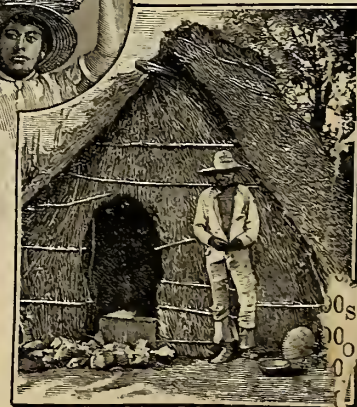
Parsees, Bombay.



Hindus.



Ceylon Girl.



Mexicans.

The descendants of this branch of the Aryans are now called Hindus. Their country is one of the most thickly settled in the world. Other bands drove their herds westward, and settled in the grazing lands of Persia. See the map of Asia. After many years, one branch of these people moved along the northern shore of the Mediterranean sea. The tribes of this branch have grown to great nations in Greece, Italy, Spain, Portugal and France.

90. Religions.

People who worship idols, or objects such as the sun, fire, animals or images, are called *pagans*. As a rule, they believe that there are spirits having magical power to do good or evil.

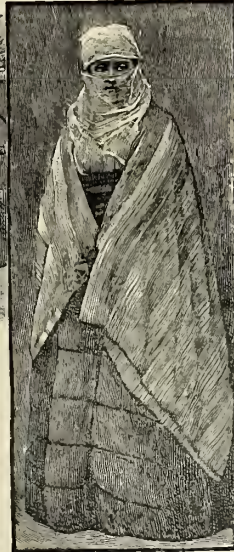
Nearly all savages are



Jewess.



Egyptian Runner.



Egyptian Woman.



Arab Woman.

pagans. Most of them belong to the black and the red races, but there are many savages in each of the other races. About one seventh of the people on the earth are pagans.

India is the seat of a very old religion that divides its followers into classes called *castes*. The four principal castes are the priests, the soldiers and rulers, the merchants, the servants. Below these are the outcasts.

Brahma is one of the chief gods in this religion. The priests are called Brahmins, and all the believers are *Brahmanists*.

About one half of the people in India, or one tenth of mankind, are Brahmanists.

Many centuries ago a prince in India taught that caste had nothing to do with religion. He did not believe in a God. This prince was called *Buddha*, and his followers are *Buddhists*. The Buddhist religion in India soon passed away, but it spread over central and eastern Asia.

Most of the people of the yellow race, or about one third of the human race, are Buddhists.

The Semitic branch of the white race has given to the world the three religions whose followers worship one God.

The Christians believe in one God and the *Bible*; the Jewish people believe in one God but not in the *New Testament*; the Mohammedans believe in one God, but their sacred book is the *Koran*.

The Christians are mostly descendants of the Aryans who settled in Europe. The Christian lands include the greater part of America, Europe and

Australia, and the many European settlements in nearly all parts of the world. About one fourth of the people on the earth are in Christian countries.

Mohammed, the founder of the religion which bears his name, lived in Arabia about a thousand years before the first English colony settled in America.

The Mohammedan religion has spread into northern Africa and Sudan; also, over nearly all southwest Asia, part of India, and the largest of the islands settled by the brown people. This religion includes among its followers about one seventh of the human race.

91. Governments.

A number of savages living under one ruler, or *chief*, form a *tribe*. A chief generally has absolute power over the lives and property of his subjects, but as the tribes become more civilized the people secure more rights.

The *tribal* government is the common form of rule among pagans.



Semitic Type (Arab).

A body of people above the savage state, united under one ruler, may be called a *nation*. The land inhabited by a nation is known as a *country*. The city in which the laws of a nation are made is the *capital* of the country.



Moorish Woman.



Hamites.

Among some nations the rulers have absolute power. They make the laws and enforce them, and also hold office for life by right of birth. A nation thus ruled is an *absolute monarchy*. The rulers, or *monarchs*, take such names as *czar*, *shah*, *sultan*, *ameer*.

The Mohammedan and Buddhist nations, except Japan, are absolute monarchies.

A government in which the ruler holds office by right of birth, but is limited in power, is called a *limited monarchy*. Such a ruler is commonly called a *king*, *queen*, *emperor* or *empress*.

A government in which the people elect their own ruler is a *republic*.

The Christian nations, except Russia, are either limited monarchies or republics. Russia and Turkey¹ are absolute monarchies. France and Switzerland are republics.² The other nations of Europe are limited monarchies.

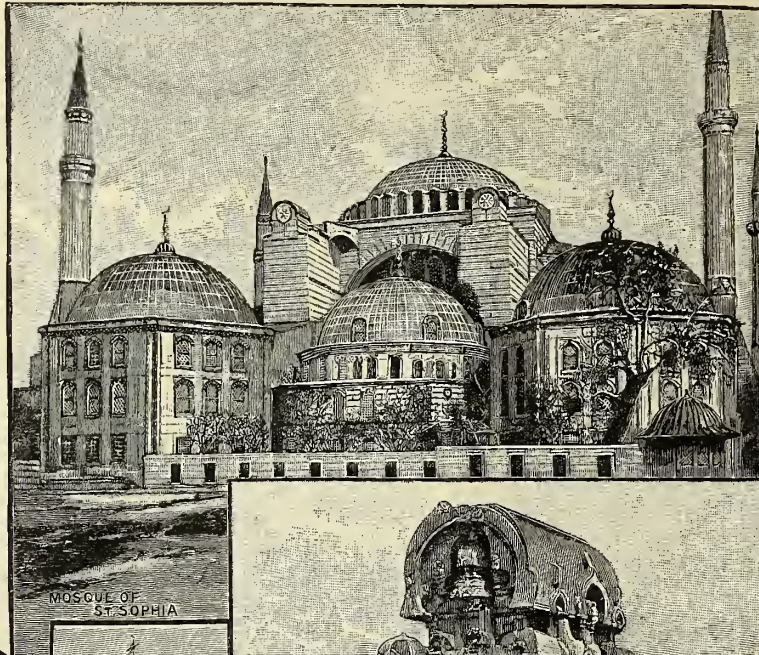
The nations in Europe have laid claim to nearly all parts of Africa, as well as to some other lands. Great Britain possesses Canada, Australia, India, Belize,³ and part of Guiana. The other two parts of Guiana belong to France and Holland.

Greenland and Iceland belong to Denmark. The nations of Europe govern several other islands off the coast of America. Cuba is under the protection of the United States.

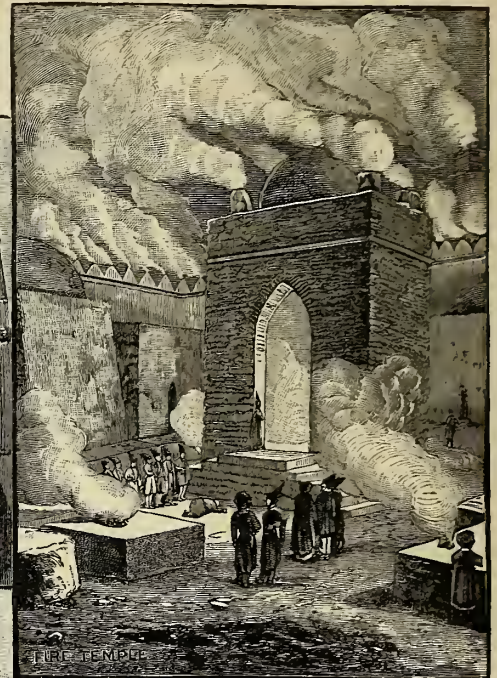
All the countries in America are republics, except those named above as possessions of nations in Europe.⁴

What bounds the land of the Negro on the north? Where are the Bantu tribes? The Kaffirs?

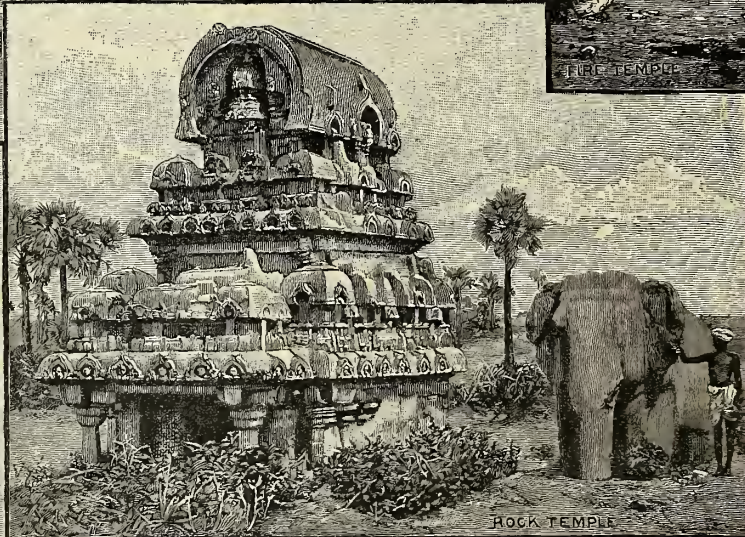
Where do the Papuans live? In what part of Australia are black natives found? In what part of the United States are there many Negroes?



MOSQUE OF ST. SOPHIA



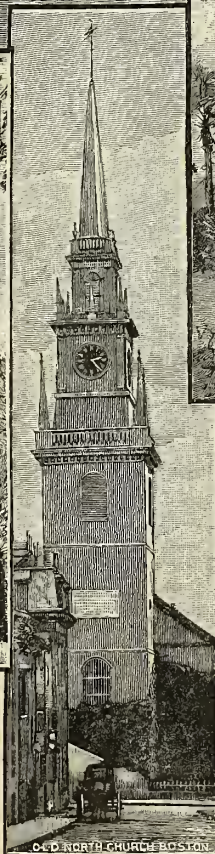
FIRE TEMPLE



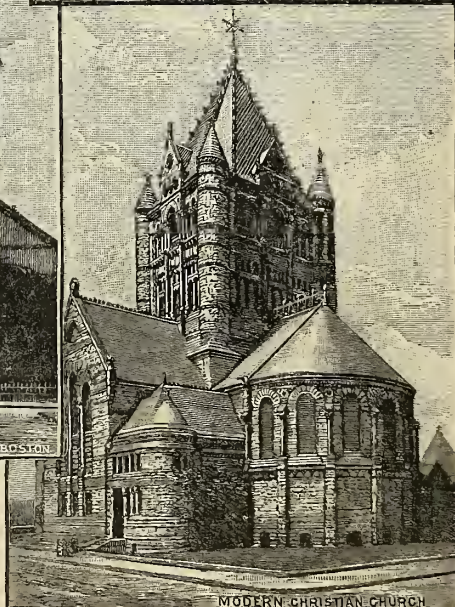
ROCK TEMPLE



PAGODA



OLD NORTH CHURCH BOSTON



MODERN CHRISTIAN CHURCH

Where is the home of the brown race?

Name three large islands of the East Indies.

Where are Indians found? Eskimos? Lapps? Japanese? Chinese?

Where is the home of the white race in the Old World? Who were the Aryans?

Where are the Hindus

found? The Arabs? The Egyptians?

Tell what race or races are found in each of these river basins: Amazon, Kongo, Mississippi, Nile, Ganges, Lena, Niger, Plata, Mackenzie, St. Lawrence, Volga, Yangtze, Amur.

What people live on the highest plateau? In the largest river valley? On the greatest desert? In the coldest lands?

What races live along the shores of the Pacific ocean? Of the Indian ocean?

To which race or races do the people in each of these lands belong? — China, British Isles, Brazil, Arabia, Germany, United States, India, Greenland, Borneo, Russia, Japan, Kongo State, Egypt, Peru, Mexico, Sudan, Java, Australia.

PICTURES. — The "Mosque of St. Sophia" is a Mohammedan place of worship in Constantinople. The "Fire Temple" is supplied with gas from the naphtha wells of Baku, a port on the west coast of the Caspian sea. The "Rock Temple" is a fine specimen of the Hindu temples in India. Pagodas are common in southeast Asia. Paul Revere's signal lanterns were hung in the tower of the "Old North Church." The lowest picture in the group is the beautiful Trinity Church, Boston.

92.

Review of the Races.

What races are separated by the Pacific ocean? By the Atlantic ocean? By the Indian ocean? By the desert of Sahara? By the Himalaya mountains?

¹ Turkey is under the rule of Mohammedans, but most of the people of European Turkey are Christians. Japan is a limited monarchy.

² San Marino and Andorra are scarcely more than small cities. See pages 77 and 79.

³ A colony in Central America.

⁴ For fuller account of our government, see lesson 113.



PLANTS.

93. Where Plants Grow.

Can you name two plants that thrive in wet soil? Two that thrive in sandy soil?

Where do water lilies grow? Do you know where pussy willows are found?

Of what use are long roots to trees? Would short roots be as useful? Try to find a plant growing on the bark of some tree. Name two trees that drop their leaves in autumn. Name two that hold their leaves all winter.

In what ways may seeds be scattered over level land? How may they be carried over high land? Across rivers?

Name two plants that yield fibers from which cloth is made. Name three plants that are used in making medicine.

What is tar? What is India rubber? Name six food-plants. What articles are made from sap? From buds? From leaves? From seeds? From bark? From roots?

94. Soil, Water and Heat.

Plants cannot live in every place where their seeds may fall, but only where the soil, heat and moisture are suited to their growth.

Meadow grass thrives in rich moist soil. Thistles often spring up in sandy and rocky places. Water lilies take root in mud at the bottoms of ponds. Mosses cling to rocks and trees. Clover seeks warm sunlight. Many ferns grow in shady woods.

Seeds of swamp plants may be blown to dry sandy fields, but there they will die. If thistle seeds are sown in a swamp they will rot. Some kinds of rice grow in flooded fields, while many cactus plants thrive in deserts.

Some plants need a longer hot season than others in order to ripen their seeds.

Orange blossoms often cover a tree in early spring while the branches are still loaded with golden fruit from the last year's blossoms. The apple tree blooms in the spring-time, and its fruit ripens before winter.

Bananas require hot or warm weather all the year; while in the far north, where snow covers the ground except for a few weeks in summer, millions of poppies find time to spring up, blossom, and ripen their seed.

A plant is not found in all places where the soil, heat and moisture are suited to its growth. If the plant is not native to the place, its seeds or the plant itself must first be taken there.

When white people first settled in America when a joint forms heat nor cotton. After a time the seeds were brought across the ocean, and now these plants are am World. Most of our grains and fruits are natives of other lands.

95. Plants of the Hot Belt.

What lands are included in this belt? See map on page 21.

What are the seasons in this belt? When do the rainy seasons come? See maps on pages 22 and 23.

The torrid belt is often called the *belt of palms*, because so many palm trees thrive in it. Among these is the useful cocoa palm.

From the wood of its trunk many useful articles are made. The fibers of the leaves are woven into ropes, cloth, mats and baskets.

The natives use the nuts for food, and make dishes out of the hard shells. The cocoa palm thrives best near the sea.

Some palm trees produce dates. These are the chief article of food of many desert tribes. Other palms yield wax, oil, sago and wine.

India rubber is made from the sap of many kinds of trees and vines that grow in the hot belt. Many dye-woods are also

Among the chief articles of food of people in the hot belt are bananas, plantains and breadfruit. Bananas and plantains are very much alike, — the latter being slightly the coarser.

Breadfruit grows to about the size of a child's head. The fruit is often baked, and sometimes it is ground to flour after being baked. On many islands in the Pacific bananas and breadfruit are almost the only food of the natives.

The East Indies and many other parts of the hot

belt are very rich in spices. There are found the sweet-scented kernels of nutmeg, the biting flower buds of the clove, the fragrant bark of the cinnamon, the hot root-stock of the ginger, and the stinging dried berries of the pepper.

This belt supplies the world with coffee. Among the other chief products are cotton, sugar cane, rice and the opium poppy.

found there. Among the trees of the hot belt yielding valuable wood are ebony, rose-wood and mahogany.

Another useful product of the hot belt is bamboo. This is a very strong coarse grass-like plant, growing to the height of sixty or seventy feet.

In India, China and the East Indies entire huts with their furniture are made of bamboo. Its seeds and tender shoots are served as food, on dishes cut from its tough joints. Other parts of this plant are used in making baskets, paper, ropes, boats, cloth and weapons.



The vegetation of the hot belt surpasses in variety and density that of any other belt. In places the trees grow in dense masses, with long vines weaving networks among the branches. Many orchids of rich color and beautiful shape grow

in the forests. There are also tree ferns, huge lilies and countless other plants which we can see only in hothouses.

The thick foliage shuts out the drying sunshine from the lands in many parts of the hot belt. The rainfall being heavy, these are common in some very wet and therefore unhealthy for white people. The tower of the "Old North" and the beautiful Trinity Church, Bc

96. Plants of the Warm Belts.

What lands are in the northern warm belt? What lands are in the southern warm belt? *See map on page 21.*

What are the seasons in these belts?

The plants of the warm belts resemble those in the hot belt. Most of the trees are evergreens, that is, they do not shed their leaves in winter. Figs, dates, olives and grapes abound, and large groves of oranges and lemons are a source of wealth in many parts

of these belts. Cotton also is one of the leading products.

The most productive cotton regions in the world are the warm plains of the United States, India and Egypt.

The value of this plant is shown by the fact that about one half the people of the earth wear clothing made wholly of cotton, and nearly all the rest of the human race, except some savage tribes, use it in part of their dress.

on the stalk, the fields are again flooded, and the grain ripens while standing in water.

Nearly all kinds of grain thrive in parts of the warm belts. Among the other valuable plants are tea, sugar cane, sweet potato and tobacco. Most of the tea comes from southeast Asia. There is also found the teak tree which supplies valuable lumber, and the mulberry upon whose leaves silkworms feed. Many species of cactuses grow in Mexico and the arid lands in the southwest part of the United States.

Most of the cactus plants have leafless stems, with large thorns.

The century plant yields a valuable fiber from which cordage is made.

In many parts of the warm belts, and some parts of the cool belts, there are wet seasons followed by months of drouth. In such regions, the rains or the melted snow of the uplands is often gathered into reservoirs, for use

For ages rice has been one of the leading food crops in China, Japan, India and other parts of the warm belts.

Rice grows both in low-land and in upland regions.

The best rice is raised on flooded lands. One plan is to lay out the fields in little furrows, about fifteen inches apart. In these the seed is sown, and then water is let in. This stands till the seed sprouts, and the water is then drained off. When a joint forms

during the dry season. Canals or ditches from these reservoirs lead the water into groves, vineyards and vegetable gardens. If it were not for this water supply, some of the most fruitful regions of the earth would be

little more than deserts for half the year.

In places having seasons of drouth, water is sometimes obtained by sinking or driving pipes into the ground, thus reaching a supply of ground water. Many thousand of these artesian wells feed ditches that lead water to groves and gardens in the warm belts.



97. Plants of the Cool Belts.

What lands are in the southern cool belt?

What large river basins are wholly or in part in the northern cool belt? What highlands in the Old World bound this belt on the south?

What are the seasons in the cool belt?

The cool belts are often called the *belts of grains*. Indian corn, wheat, rye, oats and barley are raised in nearly all parts of these belts.

Among the leading nations, wheat is the grain most widely used for food. The crops that supply the markets of the world are raised chiefly in the prairies and other plains of the cool belts.

Corn is another valuable grain. It was raised by the Indians long before the white man came to this country. Corn is a rapid grower and is wide-spread over the cool belts and the lands still nearer the equator. This grain is better suited to the prairies having hot summers, than to the British Isles with their mild weather lasting nearly all the year.

Rye, oats and barley are hardy grains and thrive in

Linen cloth and thread are made from the silky fibers that form an inner bark round the stalk of flax. Linseed oil is pressed from flaxseed. This oil is largely used in paints.

Hemp is used in making ropes and coarse cloth.

Many hard-wood trees, such as the oak, maple and walnut, grow in the warmer parts of



the cool belts. Forests of cone-bearing trees, called evergreens, thrive in the colder parts of these belts, both on plains and highlands. Trees of this kind abound also on the cool mountain sides in the warm and the hot belts.

The pine, spruce, fir, hemlock and cedar supply the most useful soft-wood timber. The giant trees of California belong in this group.

The cone-bearers are of great value. They are very wide-spread; their wood is light and strong; they yield tar, pitch, rosin and turpentine. Try to find out the uses of these products.

Orchard fruits, hay and vegetables thrive in many parts of these belts.

Vegetables are not generally raised on such a large scale as the grains, yet the scattered vegetable crops, taken as a whole, yield large returns.

The raising of vegetables for market is called *market gardening*. The best locations for market gardens are near large cities where the fresh produce meets with ready sale. Try to find out where the vegetables used in your home are raised.

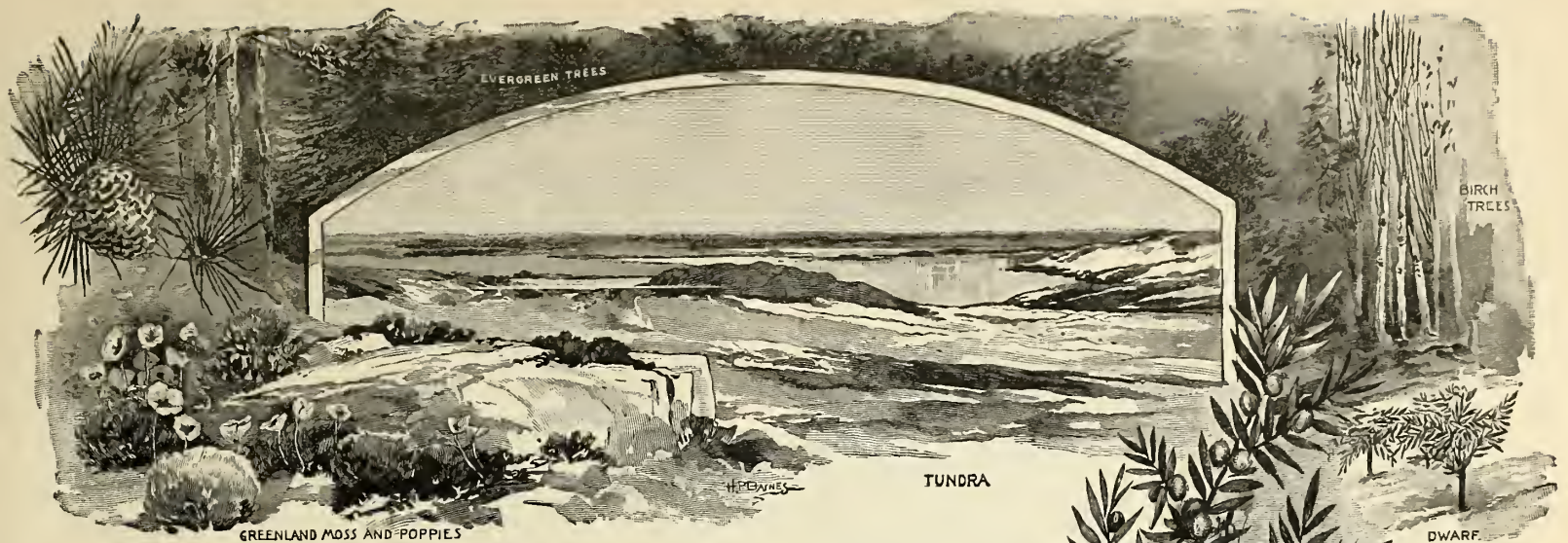
Hay is a very valuable crop in regions where many horses and cattle are raised and where there are long periods of cold or drouth.

Apples, pears, peaches and grapes are wide-spread over these belts.

most parts of the cool belts.

Barley is perhaps the most wide-spread of grains. It grows both upon the Arctic shore of Norway and in the valley of the upper Nile, not far from the equator.

Flax and hemp thrive in the cool belts. Next to cotton, flax is the most valuable of the fiber plants.



98. Plants of the Northern Cold Belt.

What lands are in the northern cold belt? What large rivers flow into the Arctic ocean?

What have you learned about the seasons in this belt?

Some kinds of pine, spruce, birch, willow and other hardy trees grow in the warmer parts of the northern cold belt. Northward the trees become fewer and smaller, ending with dwarf birches and willows, only a few inches in height, on the dreary plains near the Arctic shore. There, in the cold marshy *tundras* are also found mosses, lichens and stunted shrubs.

On the northwest coast of Greenland within a few hundred miles of the pole, and also on the tundras, the summer sun melts the winter snow which has buried the land. Little lakes form, and

brooks run into the sea. Sap starts in the willow stems, and Arctic hares come from their holes to feed on the bursting buds. The slopes are bright with poppies, saxifrages and other hardy flowering plants. Large patches of ground are then covered with orange and gray lichens.¹

All these things are seen where only a few weeks before the land was wrapped in the snow and the darkness of the long Arctic winter.

What have you learned about the days and nights within the Arctic circle?

¹ Adapted from Hayes' *Open Polar Sea*.



ANIMALS.

99. Animals,—Their Habits and Uses.

What do cows feed on? Hens? Mice? Cats? Bees? Horses?

What kind of covering has an oyster? A lobster? A bear? An ostrich? A snake? A frog?

Can you name two animals that live both on land and in water?

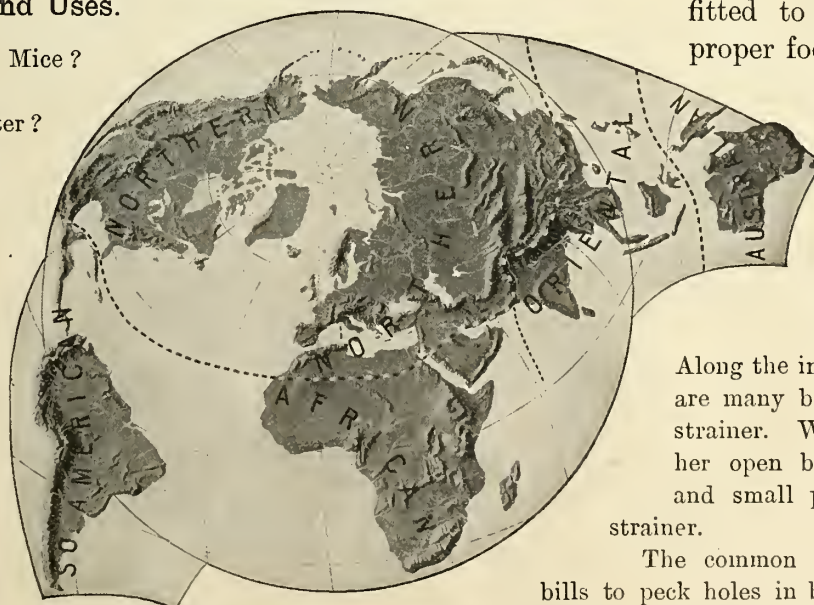
How does a cat defend itself? A horse? A cow? A bee?

How does a robin move from place to place? A snake? A fish? A frog? A horse?

Name some of the uses of cows,—of horses,—of dogs,—of sheep,—of hens,—of seals.

100. Animals and Their Homes.

Every kind of creature grows to suit its native haunts. By its teeth, feet and other parts of its body, every animal is fitted to seize and devour its proper food.



The Animal Realms.

fitted to seize and devour its proper food.

Ducks take their food largely from ponds and streams. These fowl have webbed feet and can swim easily and swiftly. The oily bodies of ducks grow very wide and are thus well suited to float.

Along the inner edges of a duck's bill are many bristles that form a kind of strainer. When the duck swims with her open bill in the water, insects and small plants are caught in this strainer.

The common woodpeckers have strong bills to peck holes in bark where worms and insects live. Each foot of the woodpecker has two toes in front and two curved backwards. These easily cling to the rough surfaces of trees and the birds can climb very quickly.

Every kind of creature has the kind of covering that suits its native home.

Whales that live in polar seas have thick layers of fat, or *blubber*, to keep the icy water from chilling their muscles. Seals are covered with warm fur, robins with light feathers, alpacas with curly wool,

They may be swift and strong, but they cannot live in regions that do not supply their food.

The warm parts of the Old World are the home of the elephant and the giraffe. What prevents these animals from reaching South America? Why cannot cattle cross wide deserts?

Many animals have been taken by man to new homes.

Cattle, sheep, hogs and horses have been shipped from Europe across the ocean, and now thrive in many parts of America. Countless birds have been carried to places far from their native haunts.

Most animals have a much wider range than plants.

The former are always free to move from place

to place as the seasons change or as periods of drouth come on. The chief barriers to their travel



lobsters with strong shells. Each kind of covering is suited to certain haunts.

Animals make their homes in or near the places that supply their food.

Moths of many kinds lay eggs on the leaves which will form the food of the larvae when the eggs hatch. Spiders weave webs in places where flies and other insects flit about.

Many birds build their nests in fruit trees. Most woodpeckers make their homes in decaying trees where there are generally many insects. Frogs lay eggs in ponds where their tadpoles can feed.

Among wild animals there is always a struggle for food and for life.

Tigers pounce upon deer and cattle; many birds feed on worms and insects; owls destroy field mice; polar bears catch seals and fish. Each creature may be the prey of some other.

Every animal has some means of defense or escape.

The chamois leaps from crag to crag; the rattlesnake strikes with poison fangs; the deer runs swiftly; the frog dives into water; the ostrich kicks and runs.

Nearly all animals have power to move about and seek new homes. There are places that animals cannot cross.

are oceans, deserts and highlands. These features divide the earth into

great *realms*, each having some groups of animals that differ from those of the other realms. Many kinds of animals in each realm are also found in other realms, for some can cross places that are barriers to others.

101. South American Realm.

This realm includes South America, Central America and the West Indies. It reaches from the plateau of Mexico to Cape Horn.

Among the animals of the Andes highland are the llama and alpaca.

These are in the same family as the camel, but they have no

kept in flocks. The other, called the guanaco, is hunted by Indians on the plains southward from the pampas.

The large running bird known as the *rhea*, or American ostrich, is found in the same region.

Cattle and sheep in great numbers graze on the pampas and the llanos. These animals are not native to this land but were early brought by white settlers from Europe. Hides, wool and beef are leading articles of



humps of fat on their backs, nor broad pads on their feet. Each toe of the alpaca and the llama has a thick sole that clings easily to the rough rocks over which these animals climb to find grass.

Alpacas are kept in large flocks by the Indians of Bolivia and of Peru. These animals are covered with fine soft wool.

Llamas were at one time used in great numbers to carry silver ore from the mountain mines to the plains and clothing to the miners. Trains of this work. Llama wool is made so fine as that clipped from alpacas, infest the G

Two other kinds of animals grow in the streams. One of these, the

export from the valleys of the Plata and the Orinoco.

Two large cat-like animals are found in America. The jaguar is the terror of nearly all South America and is some-

times seen as far north as the Rio Grande. Pumas, or panthers, range over the highland from the southern end of the Andes to Canada. The condor, largest of flying birds, may often be seen on the high peaks of the Andes. This bird is so strong that it sometimes kills sheep and deer.

The selvas and the low plateau of Brazil are the home of countless wild animals.

In these regions, Indians hunt the shy tapirs for their skins and meat. These creatures feed on buds, leaves and tender shoots, in the deep forest. Sharp-clawed ant-eaters tear open the ant-hills, thrust in their long sticky tongues, and gather up the little insects for food. Ant-eaters are often victims of long serpents called boas. These serpents have no poison fangs, but they coil around animals and slowly crush them to death.

There are armadillos, with bony armor; shaggy sloths that cling to branches, by means of hooked toes, and feed on leaves and fruit; harmless iguanas, or lizards, four or five feet long, that lay their eggs in the hollow parts of trees; fierce peccaries that feed on roots and fallen fruit.

and along the streams may be seen
ys, parrots, toucans and other creatures
Brazil is the home of swarms of bright-





102. Northern Realm.

The Northern realm embraces all the lands extending northward from the plateau of Mexico, from the desert of Sahara and from the Himalaya mountains.

All of North America, except its southern part, is within this realm. What large river basins of this continent does the realm include?

Name five river basins of Asia that are in the Northern realm. What part of Asia is not in this realm?

What continent is wholly in the Northern realm? Which part of Africa is in this realm?

Bears are found in many parts of the Northern realm. Of these the grizzly bear of the Rocky mountains is the strongest and fiercest. Black bears prowl in the forest regions of North America, both in the east and in the west. The fur of this species is soft and of a glossy black color. It is often made into robes. Brown bears are found in the Old World, from Japan to Spain.

Largest of all is the polar or white bear of the Arctic regions. It feeds chiefly on seals and fish. In pursuit of these the polar bear often dives into the icy water and swims long distances. This creature is never found far from the sea in which its food lives.

Among the animals which make their home in the highlands of this realm are the bighorn, or Rocky mountain sheep, the chamois and the ibex of the Alps, the Kashmir goat and the yak of Tibet.

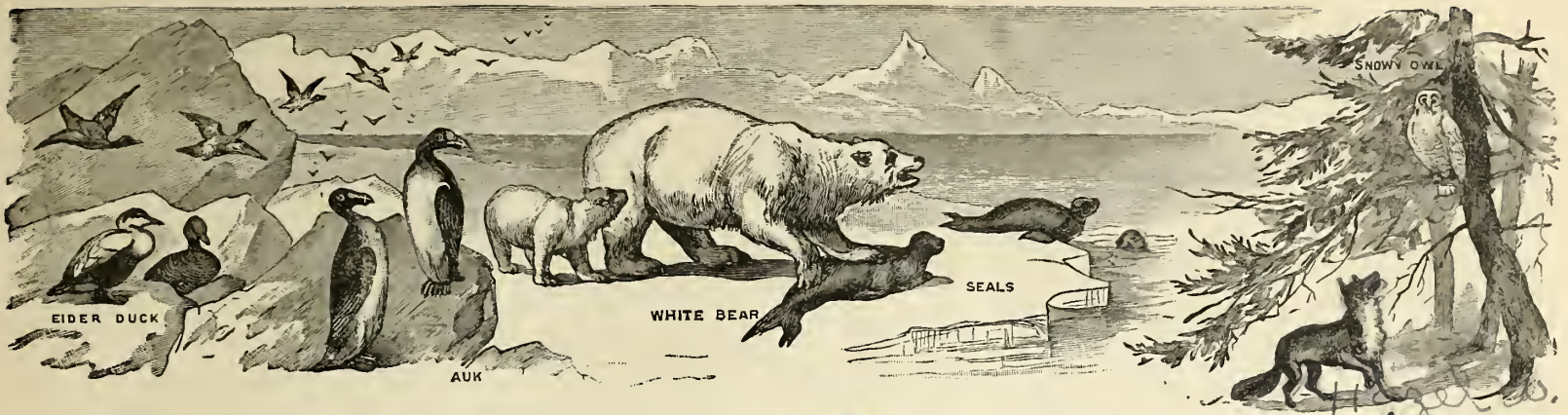
The yak is of great service to the people of Tibet. It carries heavy burdens, and supplies milk, meat and warm skins. Wild yaks live at a great height. They have been seen nearly four miles above the level of the sea.

The prairies, steppes and high plains of this realm support millions of cattle, sheep and horses. These animals are not native to any part of America.

Large herds of bisons, often called buffaloes, at one time grazed on the plains east of the Rocky mountains. Many thousand have been killed, and only a few small herds are known to exist. One of these herds is in Yellowstone park and is there protected by law from hunters. The turkey is native to America and is now one of the most valuable of fowl.

snake strikes
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differ from those of the oth
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Millions of fur-bearing animals live in the great pine-forest belt of the north, both in America and Eurasia.

There the cunning beaver feeds on berries, leaves and bark, and for safety builds its hut at the edge of a lake or a river. The watchful otter follows the streams, looking for fish. The sable, ermine and many other little fur-bearers also make this region their home. The finest and best furs in the world come from the cold parts of the northern realm.

The forest belt of the north is the home of the elk. This animal is noted for its speed and for its broad flat antlers. The American elk is called the *moose*. It is the largest of the deer family.

The reindeer also belongs in the cold regions both of America and the Old World.

The American reindeer on the mainland is called the *caribou*. Reindeer range northward in Greenland to within less than a thousand miles of the pole.

In the northern parts of Eurasia, reindeer are tamed and kept in herds. The hoofs of this deer are very wide and are well suited for travel over snow fields. The reindeer is very swift and can draw heavy loads.

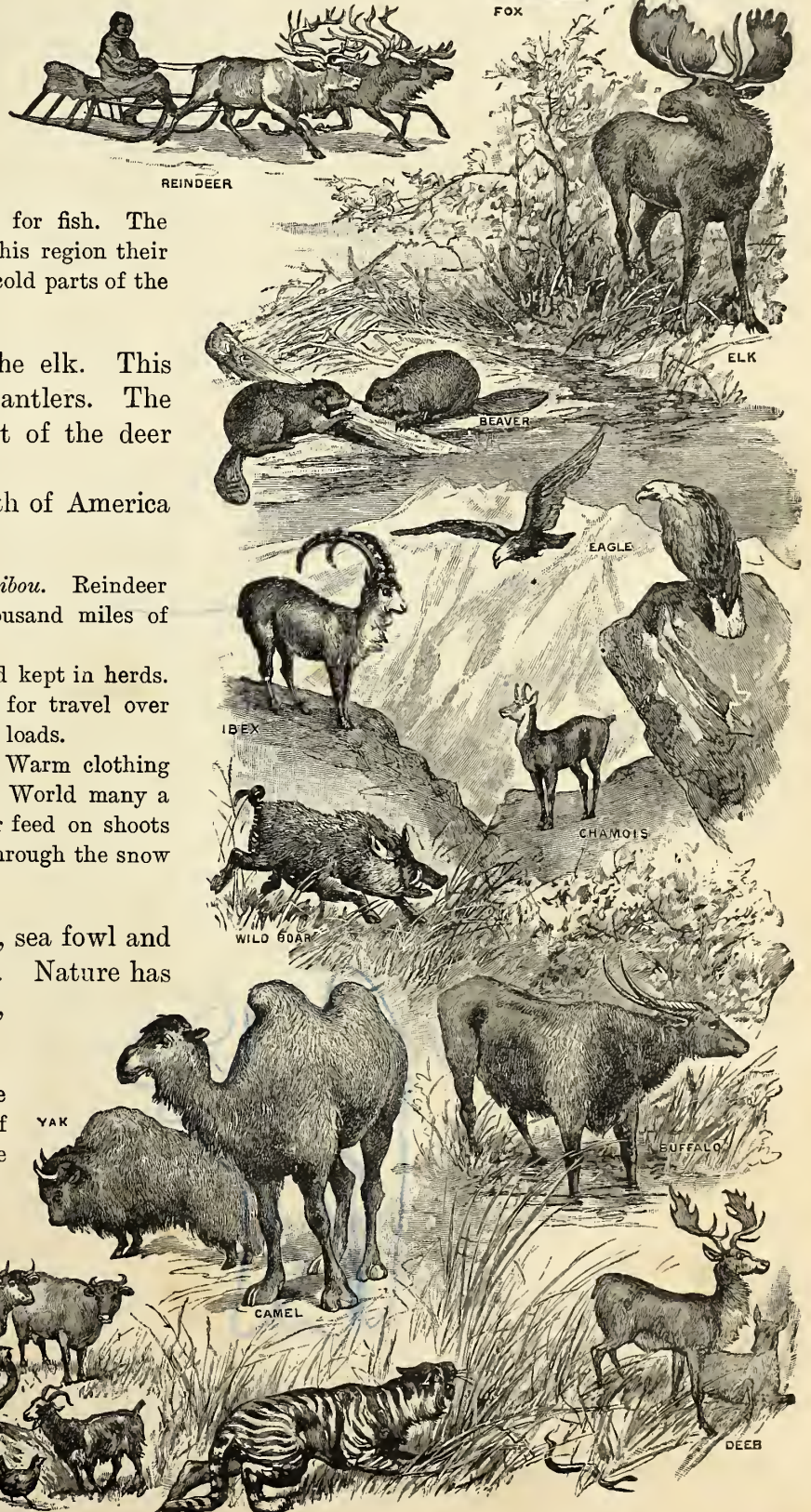
The milk and the flesh of reindeer are used for food. Warm clothing is made from the skins. On the bleak slopes of the Old World many a man's wealth is counted in reindeer. In summer the deer feed on shoots and leaves of shrubs and trees, but in winter they scrape through the snow to find a little gray lichen called *reindeer moss*.

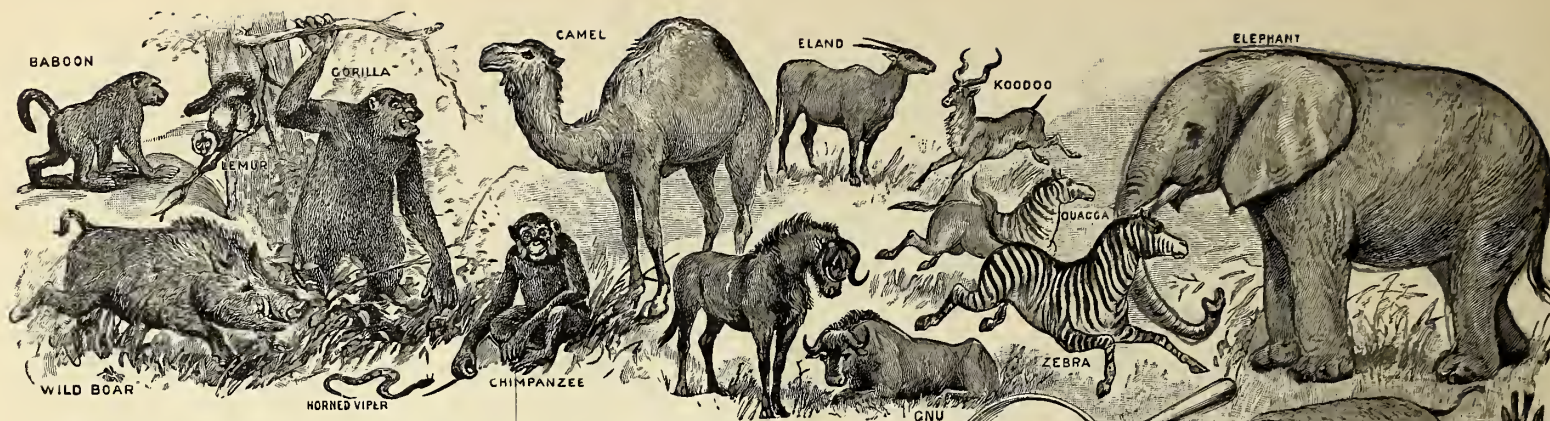
During the very short Arctic summer many seals, sea fowl and other creatures visit the far north, in search of food. Nature has given to them downy feathers, soft furs or oily flesh, to help keep them warm.

Great whales plow the icy water. One kind has a large sieve along each side of the mouth. The sieve is made of horny blades called *whalebone*. By means of this sieve, the whale gathers its food from the sea-water which it takes into its mouth. More than a ton of whalebone has been taken from the mouth of a large whale.

Many whales were formerly killed for their oil. Petroleum has now largely taken the place of whale oil for lighting purposes.

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snouts and grow to
own the streams.





The walrus is a large animal of the seal family, and lives along the Arctic coasts. The walrus has strong ivory tusks that it uses to defend itself and to dig shellfish from the bottoms of bays. It is killed for its oil, ivory, hide and coarse flesh. Seals feed chiefly on fish that they catch with their sharp claws. They swim with great speed but are clumsy on the land. Some seals are valued for their fine fur. Many of these are killed on the Pribilof islands in Bering sea. Seals form a large part of the food of the Eskimos. Among the sea fowl which visit the Arctic shores in summer, to feed and to hatch their young, are eider ducks, geese and auks.

103. African Realm.

The African realm includes the peninsula of Arabia and all Africa except the region north of the Sahara desert.

This realm is the home of many man-like apes. Among these the fierce gorilla holds first place for size and strength. This species of ape is found near the west coast of Africa, not far from the equator.

The gorilla feeds mostly on the fruit of palm and banana plants. For a nest it weaves vines into rude hammocks or mats among thick branches. This strong beast is not found in any other part of the earth.

The chimpanzee lives in about the same region as the gorilla and also far inland near the upper Nile. Many other apes and monkeys are found in nearly all parts of Africa.

The vast barren tracts in this realm are the home of the camel.

The camel has a wide sole under the toes of each foot to prevent it from sinking into the soft sand. The nostrils can be closed at will, and veils of hair hang over the eyes to keep out the hot stinging sand which often blows over the desert.

The camels of the African realm have single humps on their backs. The camels of the desert region in central Asia have double humps.

Before the camel starts on a long journey, its master sees that the hump or humps are very large. These odd swellings are masses of fat. When the beast has gone for a long time without food, this fat nourishes the body.

For three or four days at a time, the camel will bear a heavy load across heated deserts, without drinking. The body is supplied with water from pouches, or water-cells, on the walls of the first stomach.

Camel's milk and flesh are used for food. The long hair that grows on the hump, neck and legs of the camel is made into cloth.

One species of elephant is found in Africa. Each year thousands of these beasts are killed for their ivory tusks.

The lion and the leopard live in many parts of this realm. They prowl about the places in which they can pounce upon deer and other animals. Among the huge creatures that abound in this realm are the thick-skinned rhinoceros with horned nose, the tall giraffe with long neck, the giant ostrich with fine plumes and the dreaded crocodile with scaly armor.

The tsetse fly is about as large as the house fly and has almost the same color of the other. The home of this insect is in the African realm. The sting of the tsetse fly is fatal to cattle, horses and other animals. It is also dangerous to man. The tsetse fly is found in all parts of the African realm.





Cattle are not native to this land, but many cattle are now raised in the parts of the African realm which are free from the tsetse fly. The Cape buffalo is found in the southern half of Africa.

In south and east Africa there are two kinds of animals related to the common horse. These are the zebra and the quagga. They are hard to tame and are of but little use to man. Antelopes in large numbers graze in most parts of this realm. They are the swiftest of four-footed animals. The gnu, or horned horse, is an antelope.

104. Oriental Realm.

The Oriental realm lies southward from the Himalaya and Nanling ranges. See map on page 132. This realm extends almost to New Guinea and Australia.

The orang-utan, one of the great man-like apes, is a native of Borneo and Sumatra. Apes of this species weave rude nests among branches and are rarely seen on the ground. Their food consists chiefly of fruits and leaves.

The most useful animals in this realm are the zebu and the buffalo. These are found in nearly all parts of southeast Asia and have spread westward into Africa.

Zebus are a kind of cattle having great humps on their shoulders. Some of these animals are used for riding, and they can travel all day at the rate of four miles an hour. Zebus are also used for plowing, drawing carts and work.

India is often found in the wild state. Tame buffaloes burden. These animals have very wide hoofs, and are used for work on marshy or soft lands. Many buffaloes are now used as draft animals in the marshy parts of southern Europe.

There are both wild and tame elephants in this realm. Many of these huge beasts are trained to work, but the cost of feeding them is very great, and their places are to a large extent being

taken by horses. The cat-like tiger is a native of Asia. It ranges as far north as the Amur river but avoids the great central highland. The lion is also found in this realm.

The tiger feeds on cattle, deer and other animals. This fierce beast often swims from island to island in the Ganges delta.

The one-horned rhinoceros belongs in the Oriental realm. Two species are there found.

This huge beast sleeps during the day and comes from its haunt in the evening to browse on shrubs, leaves and grass.

Large crocodiles, called *gavials*, infest the Ganges delta and the lower parts of many streams in this realm.

These reptiles have long narrow snouts and grow to the length of about sixteen feet. Gavials are of service to man, for they devour the bodies of animals which float down the streams.

105. Australian Realm.

The Australian realm includes Australia, New Guinea, New Zealand and many groups of islands in the Pacific ocean.

Most of the animals in this realm differ widely from those in other parts of the world. Many have pouches for carrying their helpless young. These pouches are made by folds in the skin on the under side of the body.

The name *kangaroo* is given to several species of pouched animals. Some of these are about the size of rats. Others are as large as men. Large kangaroos are hunted for their skins, from which fine soft leather is made. These animals travel very swiftly, by making long leaps.

The emu is related to the ostrich. The plumage of the emu is long and hair-like, but there are only the rudiments of wings. This bird cannot fly, but it runs with great speed. The emu is hunted for the oil in its skin.

The apteryx of New Zealand belongs to the same order of birds as the emu, the ostrich and the rhea. The duck mole (*ornithorynchus*) of Australia lays eggs and sits on them, but it is not a bird. The water mole has soft brown fur and may often be seen in ponds and streams. It feeds mostly on insects and worms that live in the water.

The *echidna* is covered with sharp spines. It feeds on ants and other insects. This animal has no teeth, but from a long snout it runs out a sticky tongue to seize its food. The echidna lays eggs but does not sit on them. The eggs are hatched in its warm pouch, and there the little animals also remain till they grow strong.

The Australian realm abounds in black swans, lyre birds, parrots, brush turkeys, pigeons, ducks, geese and other kinds of birds.

Sheep and cattle are not native to Australia, but are now counted there in millions.

The chief grazing regions are near the eastern ranges of the continent.

106. Other Products of the Sea.

Pearls come from some kinds of shellfish. The finest are taken from pearl oysters. These are found not far from the shores of nearly all tropical seas.

Sponges are torn from rocks on the bottom of the sea at depths that vary from a few feet to several hundred. The sponges of commerce come largely from the Mediterranean and Red seas, and from the Bahama islands off the coast of Florida. Most of the fish which are used for food are caught near the shores of the sea or in rivers and lakes.

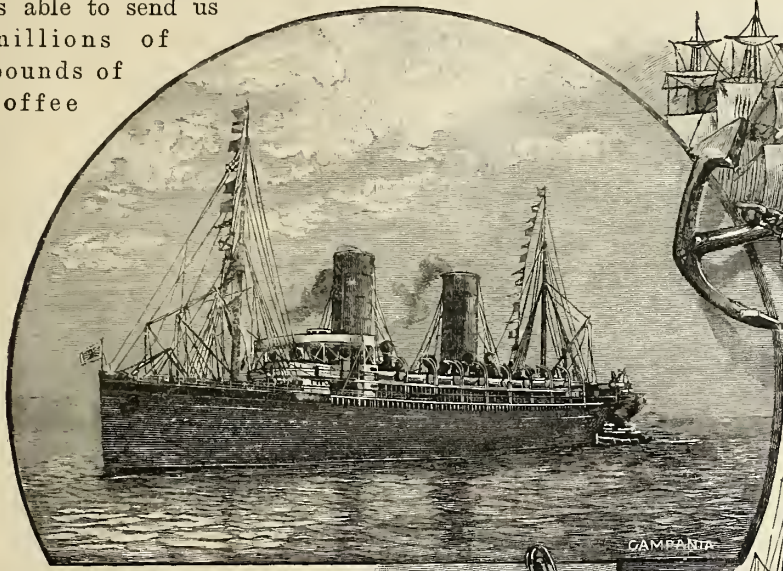
Great turtles live within or near the tropics and form a large part of the food supply on many tropical islands.



107. Domestic and Foreign Commerce.

No state nor country produces all the things which its people need, but each has a surplus of some products.

Neither tea nor coffee grows in our country. Brazil, however, is able to send us millions of pounds of coffee



each year, while China and Japan can supply us with tea.

England cannot raise grain or beef enough for her own people, but the prairies of the United States and the steppes of Russia have wheat and cattle to spare.

New England has skilled workmen and great mills for cloth-making. No cotton grows in that region, but enough is produced on the Southern plains to supply all the mills in our own country, and many in Great Britain besides.

The buying and selling, or the exchange of goods, is called *trade*. Trade on a large scale may be called *commerce*. *Domestic* commerce is that carried on between various parts of one country. *Foreign* commerce is that carried on between one country and another.

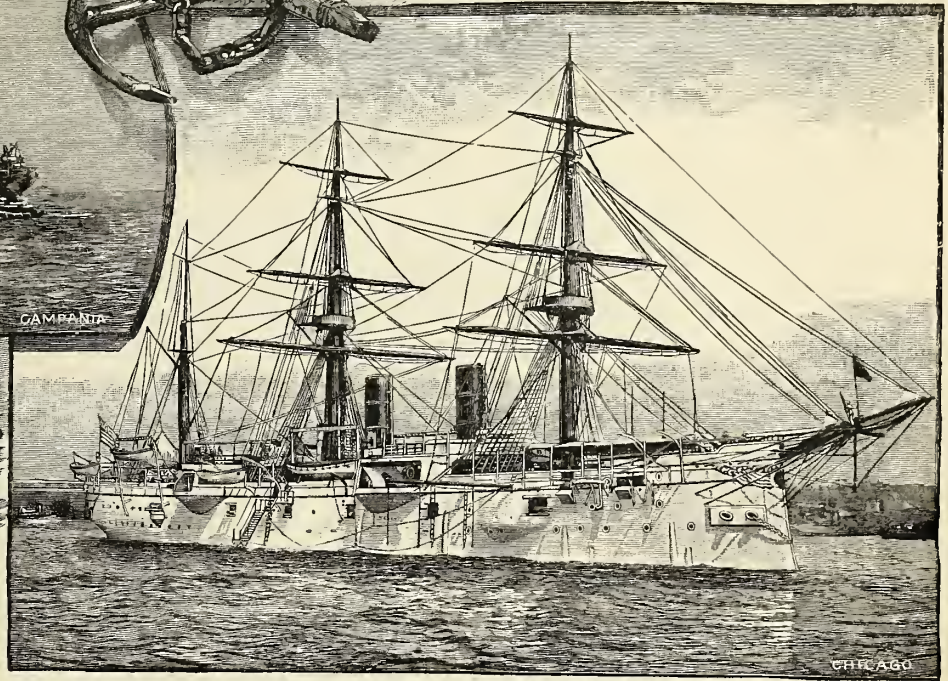
Which of the following are domestic trade and which are foreign?—Boston sells boots and shoes to the people of Texas. Brazil sends rubber to New York. Chicago sends beef to nearly all parts of our country and to Europe. France exports laces to the United States. Switzerland imports raw silk from Italy.

Great Britain leads in foreign commerce. Germany ranks second; France third; the United States fourth. Our principal exports are *cotton* from the Southern plains; *grain* and *flour* from the prairies; *beef* and *pork* from the prairies and Western plains. Our imports are chiefly *sugar*, *coffee* and *cloth*.

108. Highways of Trade, — Water Routes.

The principal highways of trade are oceans, railroads, rivers and canals.

Besides the transportation on these great highways, we have learned that camels bear loads of salt, ivory and oil across broad deserts; that reindeer drag sledges over the icy plains of northern Eurasia; that yaks toil up and down the Himalaya slopes; that llamas carry packs, or bundles of goods, over some parts of the Andes. These animals are of great service to man, for they can bear burdens in places where there



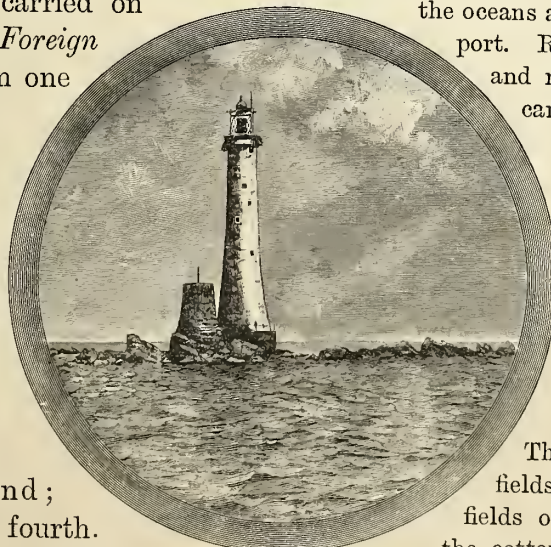
are no wagon roads, no canals, no rivers, no railroads, no arms of the sea, — none of the greater highways of trade.

Aged people can recall the time when there was not a railroad nor a steamship in the world. In those days the large rivers in trading countries were alive with boats, while sailing vessels on the oceans and inland seas went freighted from port to port. Railroads are now used more than river boats, and most of the freight which goes by water is carried by steamers.

The rivers which are of greatest use as routes of trade are those which are deep and slow, and which flow through the most productive regions.

Thus the Mississippi river system forms a great highway of trade for the states which are reached by its navigable streams.

This river system branches among the grain-fields, the forests, the grazing lands and the coal fields of the upper Mississippi valley, and among the cotton and sugar plantations of the South. Immense quantities of the products of these regions are freighted on the main river and its branches. Large ocean steamers ascend the Mississippi to New Orleans, to load with cotton, sugar, rice and other products.



Eddystone Light, Eng.

Lakes and inland seas that lead in the direction of trade centers are often of greater service than rivers.

The water way along the Great Lakes is of more importance than any other lake or river route in the world. The rapid growth of trade along this route is due to many causes, among which are the following: The grainfields, pastures, coal fields, oil wells, iron mines and large manufacturing cities of our country are chiefly in the northern half; the foreign trade of this region is carried on mostly with countries of Europe; the goods pass through New York, Boston and other large Atlantic ports.

In this immense east-and-west trade, the Mississippi system is of little use, because it leads southward to the gulf of Mexico; but the Great Lakes extend far eastward from the very heart of the producing regions, and there is consequently more shipping on these lakes than goes to and from any seaport in the world. Lines of steamers connect all the large lake ports, — for example, Chicago with Milwaukee, Detroit, Buffalo and other cities; Detroit with Cleveland; Buffalo with



Grain Elevator and Whaleback Steamer.

forests, mines or manufacturing centers; for the exports must be taken to the shipping points, and the imports must be distributed from those points.

Many large seaports, such as London, New York, Liverpool, Boston and San Francisco, are on deep harbors formed by the slight drowning of river valleys. The harbors are in many cases some distance inland, at the head of the drowned part of the valleys. Tidal currents flowing in and out of the rivers help vessels to enter and clear from the ports.

Thus, London is seventy miles from the mouth of the Thames, — 70 miles inland towards the farms and workshops of busy England. Montreal is about 1000 miles up the drowned valley of the St. Lawrence. Philadelphia and Baltimore are near the heads of two bays in slightly-drowned valleys. The nearer a steamer can go to the places which supply or receive freight, — the nearer to the producer or the consumer, — the cheaper the rates of transportation are.

The largest seaports of our country are along the northeast coast. They have grown up where they can most easily carry on trade both with Europe and with the principal producing regions of the United States. About one half the foreign trade of our nation passes through the great port of New York.¹ Boston ranks second to that port. Philadelphia and Baltimore also have a large foreign and coastwise trade.

The larger map on this page shows the principal routes followed by steamers, and to a certain extent by sailing vessels. The dotted lines indicate routes followed by foreign vessels. The solid lines show the principal routes of steamers owned in the United States.

Name six foreign ports that can be reached by American lines of steamers.

England, with her extensive manufactures and her numerous colonies, has grown to be the center of the world's ocean commerce.

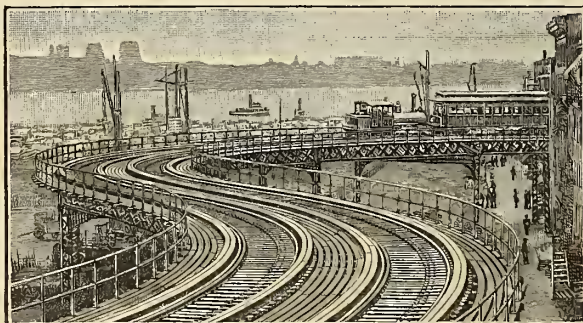
¹ The port or customs district of New York embraces the city of New York, including Brooklyn, together with Jersey City and adjacent places on New York bay.



Duluth. Small vessels from the Great Lakes can reach the ocean also, by going down the St. Lawrence river and through the short canals which have been built past rapids in this river.

The oceans form the main highway of trade between distant nations. The sea spreads in one vast body around the continents, so that a ship can sail from any one of the oceans to all the others.

Seaports handle freight for ocean commerce. The best ports are on deep and spacious harbors sheltered



Elevated Railroad, New York.

from gales and storm-waves. The largest ports grow where they can most easily handle exports and imports. Such cities are built as near as possible to the producing regions, — whether farms,



Northern and Southern Hemispheres.

From western Europe the chief routes are as follows: By way of the Suez canal to Asia and Australia; west and southwest to America; south to the cape of Good Hope, and thence to Australia and Asia.

From the large Atlantic ports of the United States the routes are as follows: Eastward to Europe; southeast to the cape of Good Hope, and thence to Australia, southeast Asia and the East Indies; southward along the Atlantic coast, around cape Horn, and thence to the Pacific ports of America.

From San Francisco, the routes lead westward to Asia; and southwest to Australia.



Freight Yard, Boston.

109. Railroads.

In progressive countries, railroads are fast taking the trade away from rivers and canals. For a long time after railroads came into use, freight charges by rail were very high, while the rates on rivers and canals were much lower. In recent years, the charges on railroads have become so low that most of the freight goes in cars.

The building of steam railroads in the United States began about 1830. The first railroad west of the Mississippi river was built about fifty years ago. The first road from the Atlantic coast to the Pacific was completed in 1869.

Most of the railroads in the world are in the United States and Europe, and nearly one half of these roads are in our country.

The railroads of the United States are four times as long as its navigable rivers, or long enough to reach about seven times around the earth. If these railroads were destroyed, all the gold and silver money in the world would not pay for rebuilding them.

The growth of railroads in the United States is due chiefly to the value of the products in widely-separated regions; to the lack of rivers flowing from the inland districts to the eastern seaboard; and to the fact that the surface of a great portion of the country is so level that the railroads are constructed at low cost.

For many years, railroads were built to carry passengers and freight between thickly settled regions, but some of the newer lines have opened the way into unsettled lands and have thus led to the peopling of large areas. Before the railroads were built, these lands were of little value, for there was no way to send products from them to the great centers of trade.

In early times, inland towns and cities grew most rapidly along the rivers, lakes and canals, but now the most rapid growth in many parts of our country is due almost wholly to railroads. The best locations are of course at the junctions of railroads or where the railroads reach navigable waters. Thus, Chicago is not only the largest lake port in the world, but it is also the greatest railroad center.

One of the maps on this page shows the most important railroad and canal routes in the United States. Still others appear on the large colored maps in the book, showing various groups of states. Nearly every city and town in our country can now be reached by way of one or more lines of railroad.

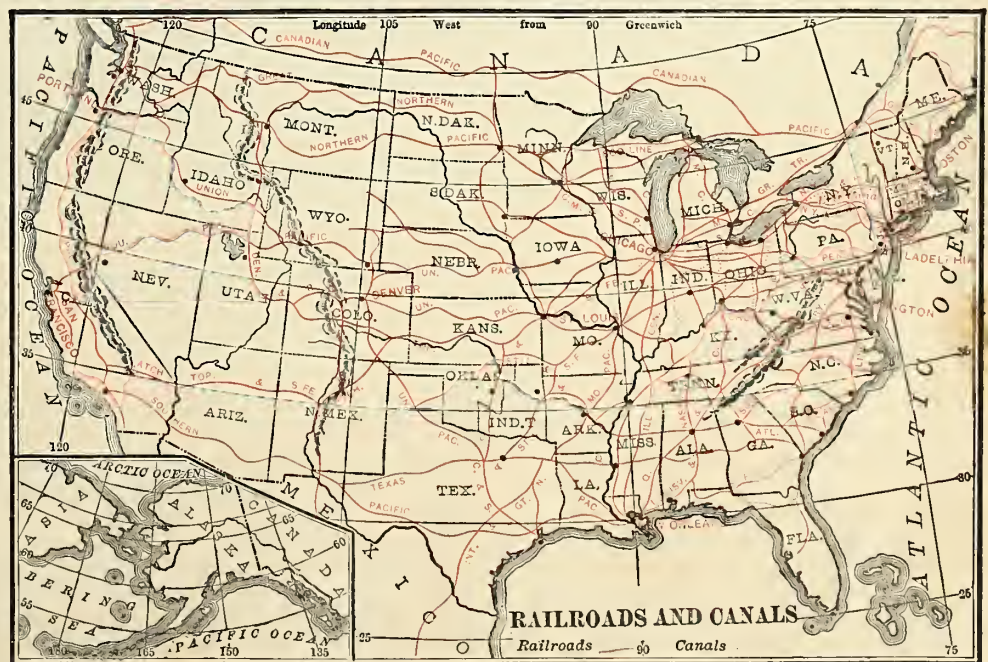
110.

Aids to Commerce.

The commerce of the world is of such great importance that nations seek in every way to foster it.

Lighthouses are built on dangerous coasts and along the main channels of harbors. Beacons, buoys, bells, foghorns and lightships are placed where they are most likely to give warning of danger.

Along many parts of the coast, men and boats are stationed to assist vessels in distress and to try to save the lives of sailors whose vessels are wrecked. Harbors are dredged and thus deepened; rocks are removed from channels; sea-walls are built to shelter vessels from dangerous storm-waves.



Commercial nations employ men known as *consuls* in all the large seaports. The consuls try to promote trade, to protect shipping, and to secure rights that belong to the sailors of their nations. To assist in this work, armed vessels are kept in readiness to go to any port where commerce needs protection. One of the pictures on page 119 shows a modern cruiser belonging to the United States.

Ocean cables, or lines of telegraph under the sea, are a valuable aid to commerce. When a steamer sails with freight for a foreign port, agents abroad can be cabled when to expect it and what to do with it. Consuls also can cable for help in times of trouble, and important news of all kinds can be sent along these wires laid deep in the sea.¹

The regular mails and the telegraph lines on the land are of so much assistance to trade that when storms blow down the wires and block the mail trains, the wholesale trade almost ceases. The telephone also has recently taken an important place in the world of commerce.

111. Time Belts and International Date Line.

As the earth rotates from west to east, Boston is turned into the sunlight about an hour earlier each morning than Chicago. After sunrise in Chicago, darkness continues for more than two hours in San Francisco. Can you tell why?

How many degrees are there in a circle? In how many hours does the earth rotate 360° ? How many degrees does the earth

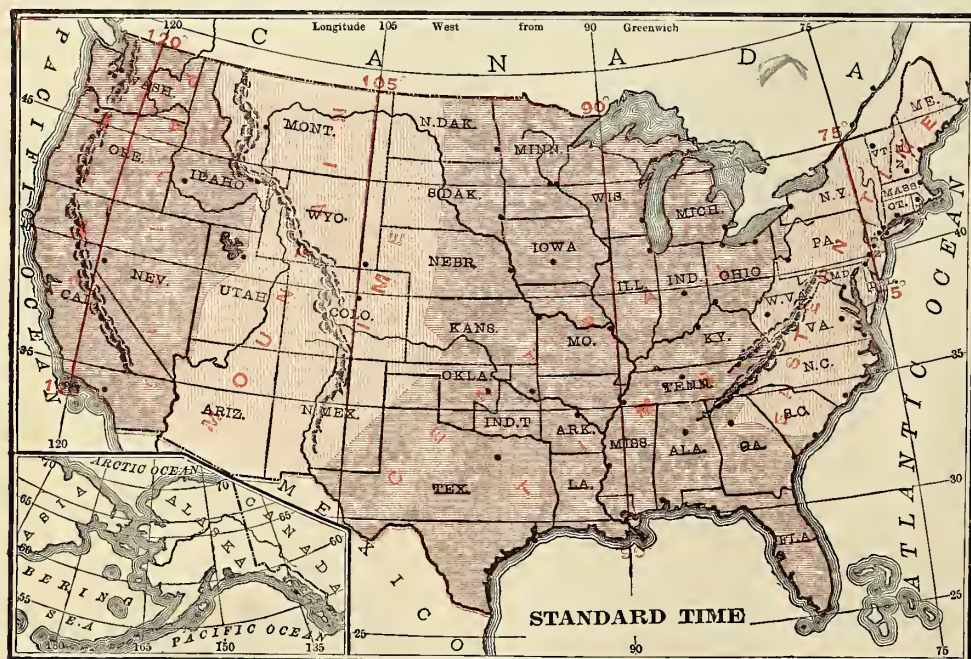
therefore in Boston, New York, Philadelphia, Washington, Richmond, and all other places in this belt, are regulated to agree.²

In like manner, all places in the Central belt, the Mountain belt and the Pacific belt take their time from the meridians of 90° , 105° and 120° respectively. As these meridians are 15° apart, the time in each belt differs exactly one hour from the time in the belt on either side.

The time in general use over a belt is called *standard time* or *railroad time*.

In going from one time belt into another, travelers set their watches forward or back *one hour*. Traveling eastward, which way should the hands of a watch be moved when another time belt is reached?

The borders of the time belts are made irregular to favor railroad companies that wish to use uniform time over very large areas. Which of these belts is the widest? How many hours difference in time is there between Boston and San Francisco?



rotate in one hour? The United States, exclusive of Alaska, extends from the 67th meridian almost to the 125th. About how many hours elapse each day while the midday sun is over some part of our country?

When it is midday along the 75th meridian, what time is it along the 90th? — Along the 105th? — Along the 120th? How far apart are these meridians? Which is nearest New York? Which is nearest Chicago? Which is nearest San Francisco?

If all clocks were set by the midday sun, calling midday *twelve o'clock*, the time would differ in cities east or west of one another. A watch, though correct in one of these places, would be wrong in all others. A traveler could not then rely on his watch, for exact railroad time.

In order to secure uniform time over large districts, railroad companies have divided the country into four belts, each of which takes its time from a certain meridian. Timepieces in the Eastern belt are set by the true or *mean solar* time on the 75th meridian. All timepieces

¹ The large commercial map of the world, in the *Supplement*, shows the routes of the cables.

International Date Line. The common day, often called the *civil day*, lasts from midnight to midnight, — twenty-four hours. In order that the civil day may have the same number or *date* the world around, the leading nations have agreed to use the date of the days as they begin on the 180th meridian.

For example, the fourth day of July begins on the 180th meridian at midnight following the third of July. At that time it is midday of the third of July in Greenwich; and six o'clock in the morning of the same day in New Orleans, 90° W. Then as the earth rotates towards the east, both London and New Orleans are turned into darkness, the one six hours ahead of the other. As soon as it is midnight in London, that city begins to count the new date of July 4th; six hours later New Orleans has its midnight and then its fourth of July begins.

Thus it is with every city, — its dates are counted from midnight to midnight, and each day takes the same date as that given to the latest new day on the 180th meridian. We may think of the new date as traveling westward with the midnight. This date is given to each place as soon as the midnight reaches it. When midnight again occurs on the 180th meridian, another date begins its journey round the earth.

When vessels cross the 180th meridian, they either drop a day or add one to the calendar. As the new date begins on that line, a vessel sailing eastward across the line goes out of the area having the new date and must therefore go back a day. Sailing westward, the vessel enters the area having a new day and must therefore add a day to the calendar. Thus when sailing eastward across the line, Monday is dropped for Sunday; but sailing westward over the line, Saturday at once gives place to Sunday.

The meridian of 180° , at which all new civil days begin, is called the "International date line."

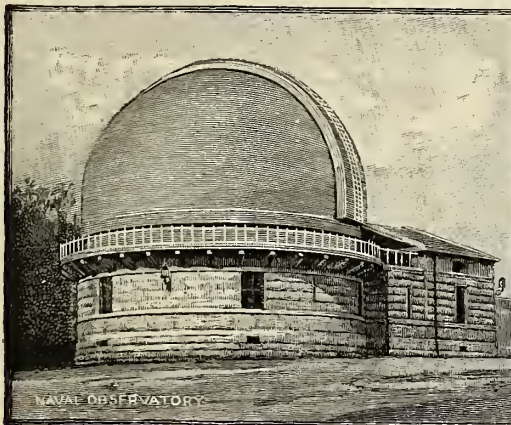
² The correct time is sent over the country by telegraph from the United States Naval Observatory, Washington. On page 123 there is a picture of this observatory.

THE UNITED STATES.

112. Distribution of People.¹

After the famous voyage of Columbus, in 1492, the various nations of western Europe sent expeditions to explore and settle the New World. Foremost among these nations were England, France and Spain.

The French explorers went up the St. Lawrence river and the Great Lakes,—thence down the Mississippi river. Others went up the Mississippi from its mouth. Many people of French descent now live in the lower Mississippi valley and speak the French language, but they are greatly outnumbered by the English-speaking people in the same region. Most of the early white settlers in the southwest portion of our country came from Mexico, which was



once held by Spain. The Spanish language is still spoken by many people in the states that border on Mexico.

The early English settlers in the United States made their homes along the Atlantic coast, and for many years did not spread far inland.²

The rugged Appalachian highland, covered with forests, stood between the coast settlements and the prairies. There were no rivers flowing from the prairies to the east coast of the United States. European nations hostile to the English claimed the St. Lawrence and Mississippi river systems, and for many years the English colonists could not use those water ways.

The valley of the Hudson and Mohawk rivers would have opened a way to the Great Lakes, if its upper part had not been held by warlike Indian tribes. Other tribes farther south also held the lands a little back from the coast.

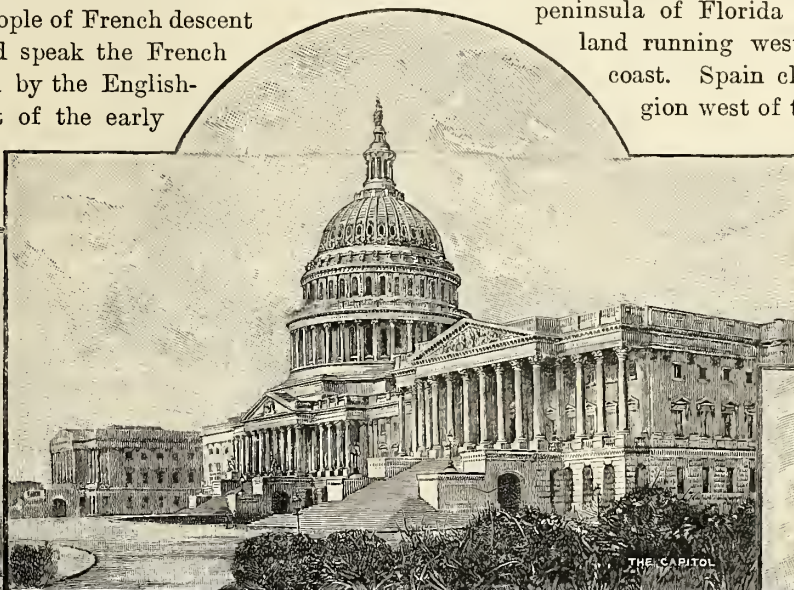
At length the year 1776 arrived, and with it came great changes in the colonies,—then thirteen in number. Great Britain had long made the colonists pay taxes which they had no share in imposing, but in that year wise and brave men from the colonies met in Philadelphia and voted that their land should no longer be under British rule. After a long struggle, known as the *Revolutionary*

war, Great Britain gave up her claim to the thirteen colonies.³

In 1776 the colonies formed a new nation. Each colony became a *state*, and all the states together were called the *United States of America*.

At the close of the Revolutionary war our country reached from the Atlantic coast to the Mississippi river, but Spain then held the peninsula of Florida and a narrow strip of land running westward along the Gulf coast. Spain claimed also the vast region west of the Mississippi river.

Since the Revolutionary war, the United States has gained the lands westward to the Pacific ocean, southward to the gulf of



Mexico, and also the great peninsula of Alaska. The area is now a little more than 3,550,000 square miles.

When the struggle for freedom was over, many people moved into the Allegheny plateau region and still farther westward along the river branches. After a time wagon roads were made across the Appalachian highland, and later came the Erie canal and the railroads. Then the growth of the country became very rapid, especially when the prairies were reached and the fertile open lands were found ready for millions of settlers. Forts and trading stations on the rivers, the Great Lakes, the Erie canal and the railroads, soon grew to towns and cities.

While the upper half of the Mississippi valley was thus being settled, a great change was also taking place in the

¹ There is a map of the United States on page 126.

² Among the important settlements made by colonists of nations other than the British were the following: the Dutch along the Hudson river; the Swedes near the mouth of the Delaware river; the French around Charleston, S. C.; the Spaniards in Florida.

³ They were: New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina and Georgia.

Southern plains. Thousands of acres were planted with cotton, and the region was very rapidly growing in wealth and population.

Until about a century ago, cotton fiber was separated by hand from the seeds. This was slow work, for a person could pick only about a pound of fiber in a day. The price of cotton was therefore high, and poor people could not afford to use much cotton cloth.



NOTE.—The dots on the above map show the location of cities and large towns. The largest cities are indicated by the largest dots. The star on the map shows the center of population according to latest census.

At length a machine was made to separate the fiber from the seeds. The machine was called a *cotton engine*,—now shortened to *cotton gin*. It has saw-teeth that draw the fibers through slits too narrow to admit the seeds. A large cotton gin can clean about fifteen or twenty bales of cotton in a day.

Before the cotton gin was invented, machines had been made for spinning or twisting fibers into thread and for weaving the thread into cloth. There was a large and growing demand for cotton. The new machine made it possible to supply this fiber without great expense and thus led to the planting of cotton in all the states of the Southern plains. Cotton has for many years been the leading crop in that region.

Soon after the first English colonists came to this country, they received a cargo of slaves from Africa. Slavery spread with the growth of the country, but the slaves proved to be of greatest service in the cotton and the tobacco fields of the South. The invention of the cotton gin created a great demand for slave labor in the cotton fields, and people of the black race were brought in shiploads from Africa.

At length all the slaves in our country were set free, and most of them made their homes on the Southern plains where they had worked and where many of them had been born. One tenth of the people in the United States are Negroes.

About fifty years ago, gold was discovered in California, and many thousand people flocked there in search of fortunes. Some toiled across the dry Western plains and the Rocky mountain highland. Others reached the gold fields by way of the isthmus of Panama,—going by water to and from that neck of land. Shiploads of gold-seekers went round cape Horn and thence up the Pacific coast to San Francisco. Gold in the Sierra Nevada led to the settling of California; but products of far greater value are now taken from the grainfields, the vineyards, the fruit groves and the pastures of that state. Silver and gold have also been found in other parts of the western highland, and towns and cities have grown up in many places near the rich mines.

In 1776 the population of the United States was less than 3,000,000. Now it is about 70,000,000,—nearly one twentieth of the total population of the world.

The rapid growth of our country has been largely due to the great number of immigrants who have come from Europe,—mainly from the British Isles, Germany, Italy and Russia.¹

Which coast of the United States is the most thickly settled? Why?

Which has the greater population,—the prairie region or the western highlands? What part of our country is the most thickly settled? Why?

Where are the cities larger,—on the Great Lakes or on the gulf of Mexico? Which part of the Mississippi basin is the most thickly settled? Why?

Why are there so few cities or towns on the Western plains? In the Great Basin? On the Columbia plateau? On the Colorado plateaus? In the great peninsula of Alaska?

Let us now learn how our nation is governed.

113. Government.

The highest law of the nation is known as the *Constitution of the United States*. This written law, or body of laws, was adopted in Philadelphia, in 1787,² by men chosen from the thirteen states. It has since received several additions, or *amendments*.



Market in "Chinatown," San Francisco.

The Constitution outlines the form of our government; names the various offices; indicates how the offices are to be filled; defines the authority of the officers; limits the power of the law-makers; provides for a Supreme Court to decide questions that may arise as to the powers of the national government; and, in general, forms the highest law of the land.

¹ There are also about 100,000 Chinese in the United States. Their largest colony is in San Francisco.

² The Constitution went into effect on March 4, 1789.

The representatives are chosen by the people. The senators are chosen by the law-making bodies, or *legislatures*, in the various states. There are two senators from each state, but the representatives are chosen according to the number of people in each state. Senators are elected to serve for six years; representatives, for two years.

To aid in conducting the government, the President (with the approval of the Senate) appoints eight men who are known as members of the *Cabinet*. These officers superintend the foreign affairs, the money, the army, the navy, the home affairs, the law cases, the post offices, and the agricultural interests, of the nation.

With the President is elected a *Vice-President* who presides over the Senate and who succeeds to the office of President, if it becomes vacant during his term.

The President and Vice-President are generally chosen by *electors* who are elected by the people.

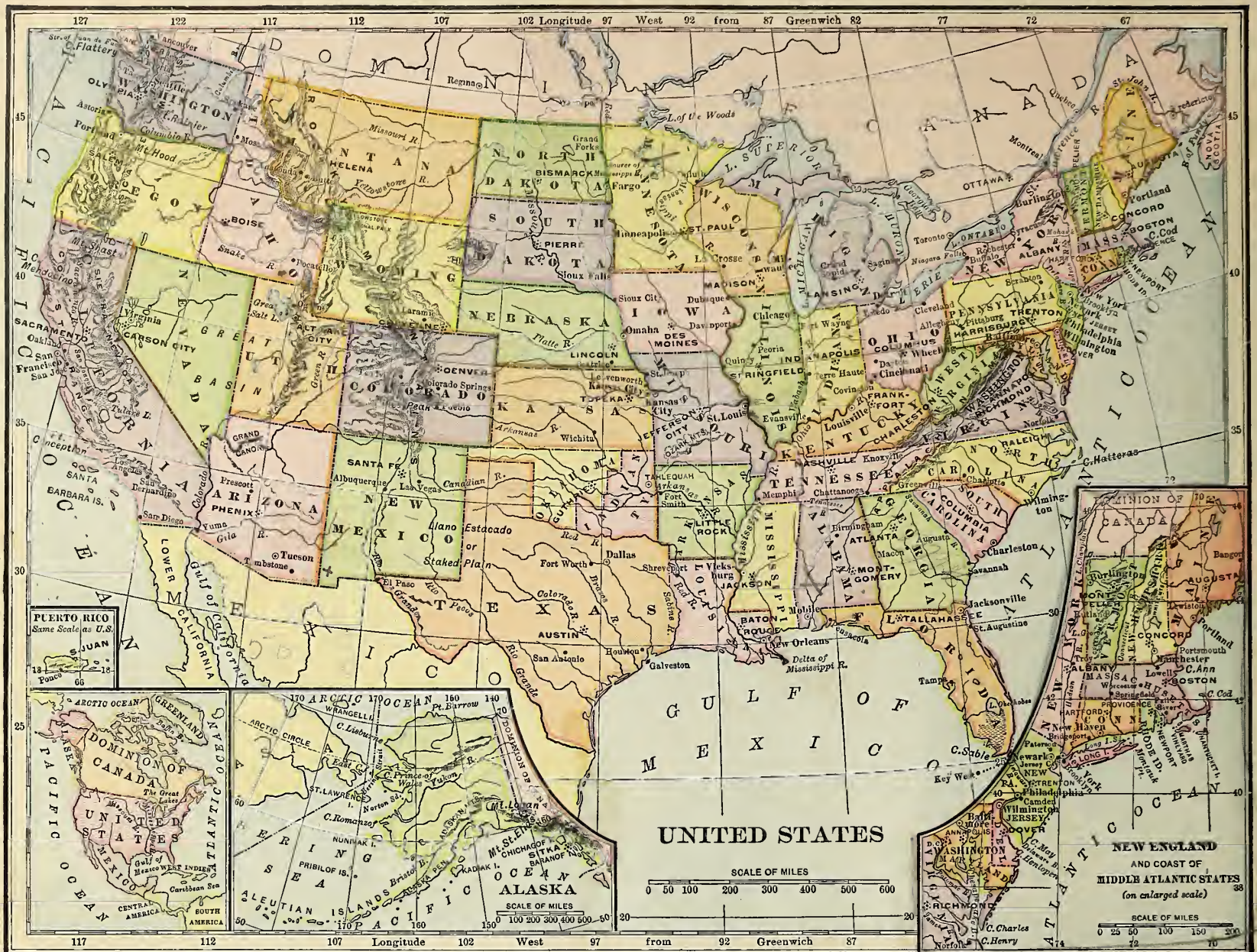
fail to cascade range? In what use of Representatives elects a President Nevada? Name the states Vice-President.
A coast.
a such states border on Canada w when it receives the consent of
Pr rritories are next to Mexico w-makers and the approval of the
berries crossed by the Arkansas approves or *veto*es a bill, it cannot
such is the largest state in our a two-thirds vote of each body, —
tives.

The *Supreme Court* of the United States consists of a *Chief Justice* and eight *Associate Justices* appointed by the President, with the consent of the Senate, and holding office for life or during good behavior.



The chief duty of the Supreme Court is to protect the rights of the people, according to the Constitution.

All powers that the states did not give to the nation, under the Constitution, they reserved for themselves. There are now forty-five states, and each resembles a republic. Each has its constitution, its Senate and House



of Representatives, its Supreme Court, its chief executive officer called a *Governor*, — as well as other officers.

Some portions of our country do not belong in any state, but are known as *territories*. Their governors and judges are appointed by the President, with the consent of the Senate, but the people of each territory elect their other officers. The territories have also their own legislative bodies.

There are now five territories, as follows: Alaska, Arizona, Indian Territory,¹ New Mexico, Oklahoma. From time to time, as the territories increase in population, they are admitted into the Union as states.

The city of Washington, with its suburb Georgetown, is on a tract of land set apart for the use of the government. This tract is known as the *District of Columbia*. It is neither a state nor a territory, but is under the control of Congress.

¹ Indian Territory differs from the other territories in not having governor appointed by the President. This territory has been set apart as a home for certain tribes of Indians, and the national government has little to do with it.

Congress meets in Washington, the Supreme Court sits there, the President resides in that city, and the members of the Cabinet have their offices there.

The United States has grown to be the foremost republic and the wealthiest nation in the world.

114. Map Studies.

Bound the United States. Bound the state in which you live.

Which states border on the Atlantic ocean? Which of these states contain no part of the coastal plain?

What state in the New England highland has no seacoast? Where are the White mountains? — The Green mountains? In which states does the piedmont belt reach the coast?

Which of the Great Lakes border on New York? What lake is between that state and Vermont?

Name the river between Pennsylvania and Delaware. Which states are on Delaware bay? — Name the states which border on lake Erie. Which state is bounded by the Potomac river? The city of Washington is in the District of Columbia; on what river is it built?

What states are grouped around the Chesapeake bay? Which of these are partly in the piedmont?



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Key to Relief Map on pages 34 and 35.

does the Savannah river flow? What states are crossed by the divide between the Atlantic and the Gulf coastal plains?

Name the states which border on the gulf of Mexico. In which of these is the Mississippi delta? What river separates Texas from Mexico? Between which of the Gulf states does the Mississippi river flow?

In what state does the Mississippi rise? Name the states along the east bank of that river;—along the west bank. Between what states does the Ohio river flow? Which of these states are wholly or in part in the Allegheny plateau?

Name the states which border on lake Michigan; on lake Superior. Which of the Great Lakes partly surround Michigan? Which states are partly in the St. Lawrence basin and partly in the Mississippi basin?

What two large rivers are near the southern and western borders of the prairies of the upper Mississippi?

Which states are partly in the prairies and partly in the Western plains? Which states are crossed by the Rocky mountains?

Name the two states that are almost wholly in the Basin region. What three states include the Columbia plateau region? What states are crossed by the Cascade range? In which state is the Sierra Nevada? Name the states lying along the Pacific coast.

Which states border on Canada? Which states and territories are next to Mexico? Name two territories crossed by the Arkansas river.

Which is the largest state in our country?

What bodies of water partly surround Alaska? What country is on the east of that territory? Where are the Pribilof islands?

115. Climate, — Temperature.

What belts of heat cross the United States? How do the seasons on the land in these belts differ from the seasons over the oceans on the east and west? See lesson 17.

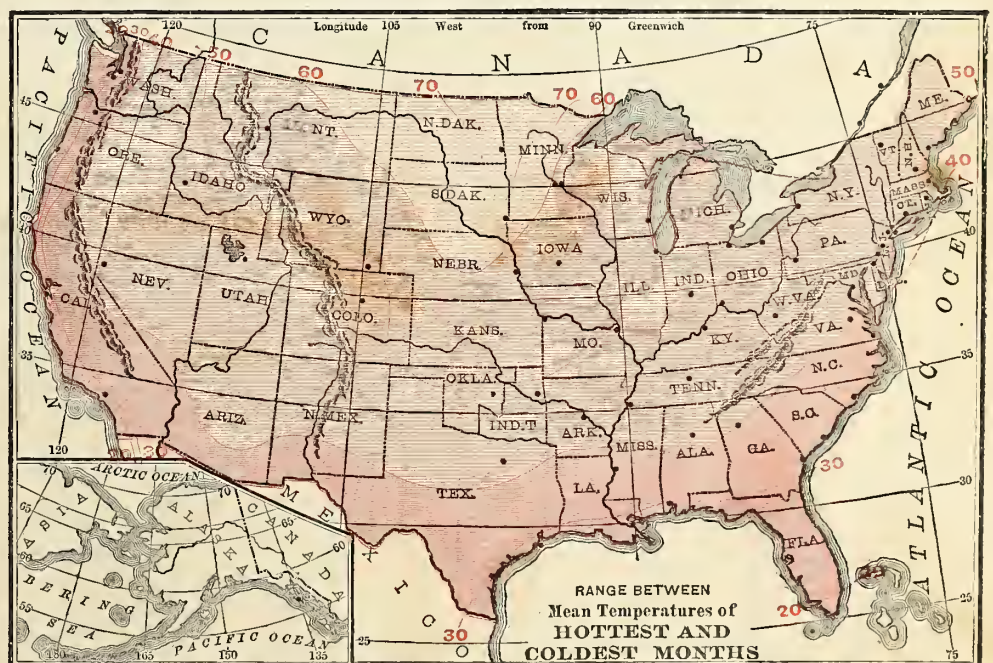


CHART A.—The above map shows that the greatest difference between January and July temperature is found on the northern part of the prairies and Western plains. There is less difference along the southern boundary and western coast.

At about what part of the distance from the equator to the pole is the mouth of the Mississippi?—The middle of Lake Huron? What does this show about the location of our country?

Although the winters in this district are so severe, the temperature rises rapidly in spring. There the long days of summer ripen great crops of wheat even northward in Canada. Cattle that can barely survive the winter climate find abundant pasturage in summer on the grassy plains. The noonday heat may then reach 90° or 100° , even at our northern boundary.

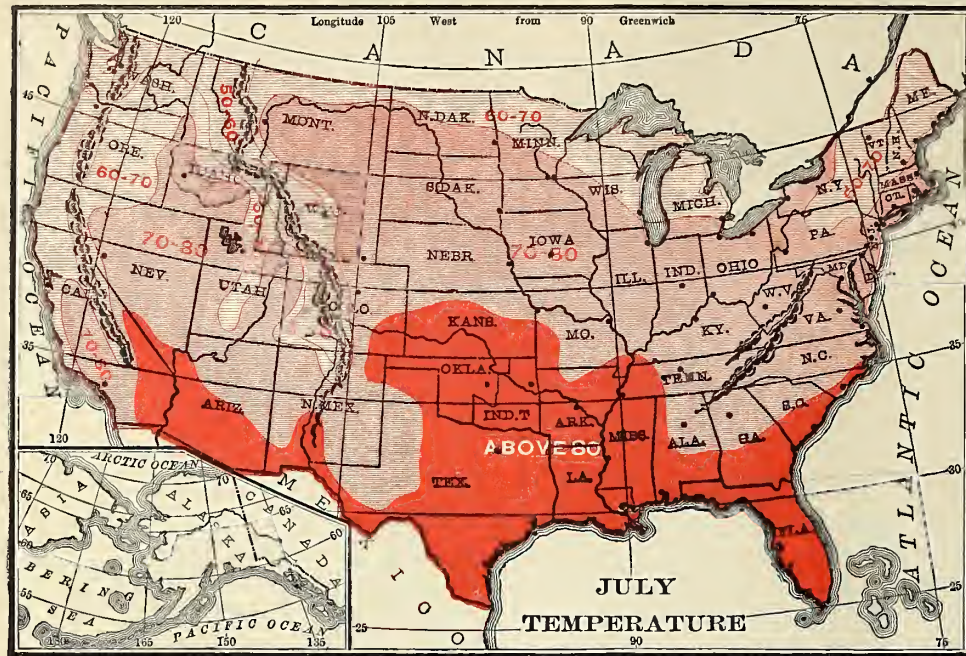


CHART B.—The greatest heat reaches northward in the middle of the country. The cooler regions are along the northern boundary, on the mountains, and along the western coast.

Our country lies between the steady heat of the equatorial regions and the extreme seasons of the polar cap.

From winter to summer, the change in the length of day and the strength of sunshine makes a great change in temperature over our country, but greater in the north than in the south. In winter the rivers and most of the lakes in the northern part of the United States are frozen; the snow-caps of the mountains reach far down into the valleys, and even the lowlands are sheeted over with snow that spreads farther south as the winter season advances.

As the days lengthen and the sunshine becomes stronger, the snow and ice melt away. Plant and animal activity begin again.

In what part of our country is the change of temperature from January to July the greatest? See chart A, page 127.

The change from winter cold to summer heat in our northern interior is very great for three reasons: first,—the winter sun is low and the daylight short, but the summer sun is high and the daylight long; second,—the temperature of the land surface changes much more rapidly than that of the sea surface; third,—although the coastal regions feel the tempering effect of winds from over the sea, yet the far-inland regions do not feel that effect, not only because the land is so broad, but also because high mountains lie along the western side in the path of the westerly winds.

During the long winter nights in the north-central part of our country, when the calm dry air rests on the broad sheet of snow, the temperature may fall to 40° or 50° below zero. In extreme cold, spirit thermometers are used; for mercury freezes at 39° below zero.

What is the difference of temperature between the Gulf coast and the northern part of Minnesota in January?—In July? See charts B and C.

The contrast of temperature between our southern and northern boundaries is very strong in winter, but slight in summer. Many plants that live only through the warm season thrive from the Gulf to the Great Lakes, but longer-lived plants that cannot survive cold winters are found only in the south.

The range of temperature from summer to winter on the Pacific coast is small (see chart A), because the westerly winds from over the broad Pacific temper the climate. They are warmer than the land in winter, but cooler in summer. As these westerly

winds blow across our country, they gradually take the temperature of the land over which they move. Thus they carry the great heat of summer or the severe cold of winter out from the interior to the east coast. The changes of seasons on this coast are much stronger than on the western coast.

The great difference of temperature between the northern and southern parts of our Atlantic coast is partly the effect of the ocean

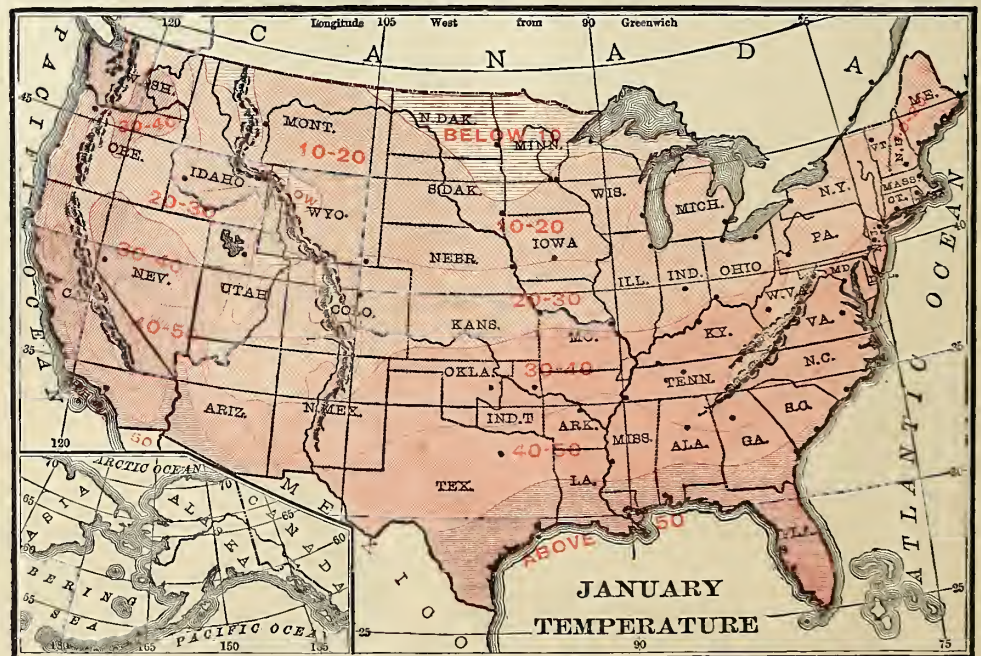


CHART C.—The greatest cold is in the northern interior. The warmer regions are the western coast, the southern boundary, and the southeastern coast.

currents. Off this coast the warm Gulf stream and the cold polar or Labrador current approach each other and tend to bring unlike temperatures together. The effect is felt on the coast whenever winds blow inland. No polar current reaches our western

116. Climate, — Winds and Rainfall.

Although winds from some westerly point prevail at most places in our country, yet their direction is variable.

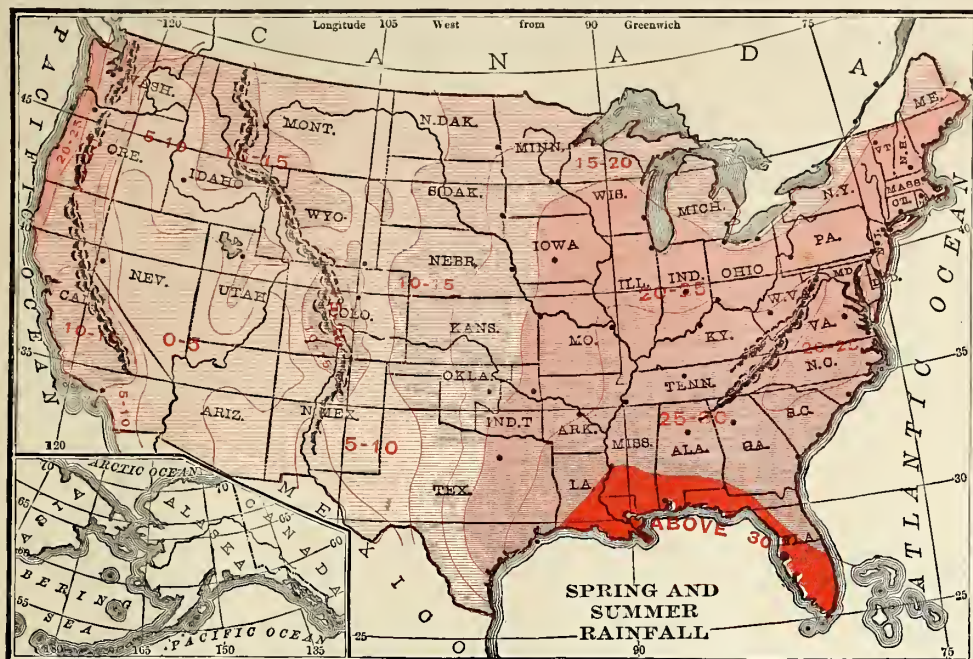


CHART D — The general distribution of rainfall for these seasons is the same as that for the year; but the northwestern coast has less than half its total rainfall during these seasons, while the southeastern coast and much of the Mississippi valley have more than half.

They generally blow more from the land to the sea in winter, and more from the sea to the land in summer. See charts on page 22. The winds change their direction and strength also with every passing storm-eddy. See charts on pages 22 and 23.

Smoke from forest fires commonly spreads eastward. Clouds, especially the higher ones, generally drift from some western point. Thunderstorms usually travel from west to east. Even the great eddy storms move eastward. The variable winds which we feel are chiefly in the lower layers of the air.

The winds of the eddy storms are seldom destructive on the land. They are of great service in bringing most of our rainfall. On the sea and the lakes, however, they are stronger and cause many shipwrecks. The form and movement of these storms is well shown on the daily weather maps issued by the national Weather Bureau. The changes in weather which the storms produce are generally predicted. In ports, signals are hoisted to warn sailors of coming gales.

As winds become cool, cloudy and wet when they ascend mountain slopes, so they become warm, clear and dry when they descend the leeward slopes. For this reason, a mild dry wind called the *chinook* is often felt in winter on the plains along the eastern base of our northern Rocky mountains. The chinook is of great service in drying away the snow so that the cattle can find grass.

In what season is the rainfall heaviest on the western coast of the United States? Why is the rainfall of the Great Basin so light? What have you learned about the rivers and lakes of this region? See lesson 25.

How do you account for the light rainfall on the Western plains? See lesson 38. What body of water supplies most of the moisture for the rainfall of the prairies? See lesson 39. In what season does the greatest amount of rain fall there?

The northern part of the western coast is well watered, for it is one of the coasts where the storms of the westerly winds come directly from the ocean to the mountainous land.

The southern part of our western coast is one of the dry regions where the westerly winds branch towards the trade winds.

The western interior of our country generally has less than twenty inches of rainfall in a year, except on the mountains. Agriculture in much of this region is therefore uncertain, unless aided by irrigation. The northern part has the most rainfall. See charts D and E.

Over the eastern half of our country, the yearly rainfall is everywhere more than twenty inches. It is least along the border of the dry Western plains, and thence increases to over fifty inches towards the sea on the south and east. The rainfall is heaviest where the moist winds from over the warm gulf of Mexico blow ashore on the Southern coastal plain, and also where they ascend the Carolina highland.

One great advantage in the climate of the eastern half of our country is the even distribution of its rainfall throughout the year. There is no long dry season, and

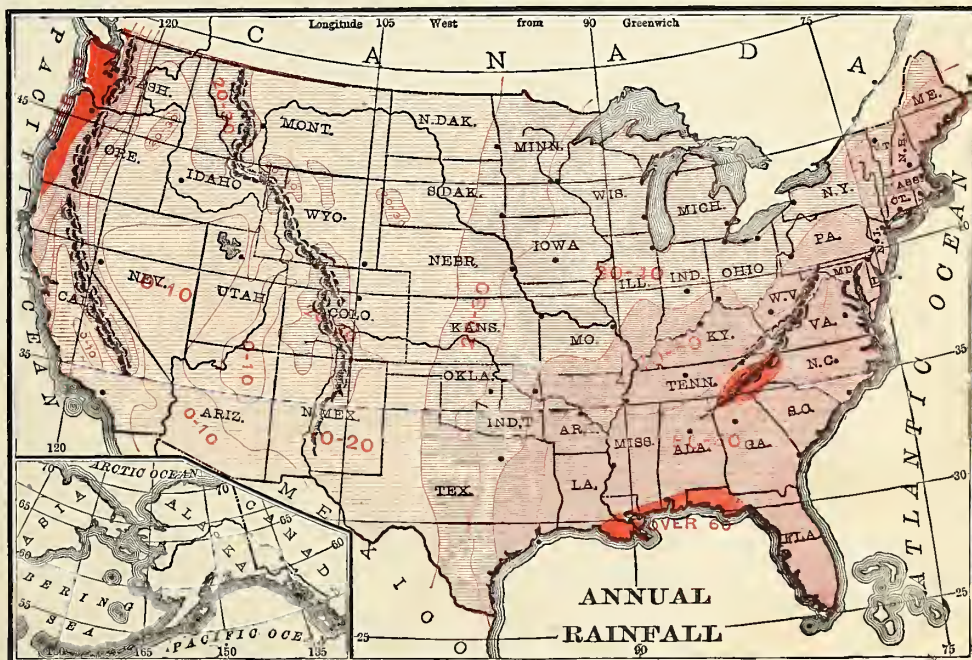


CHART E — The regions of heaviest rainfall are in the eastern half of our country and near the northwestern coast. The mountains have more rainfall than the lower lands in the same region.

drouths are seldom severe enough to cause great loss. Far inland where the rainfall is least, more than half the rain falls in the warm season when it is most needed.

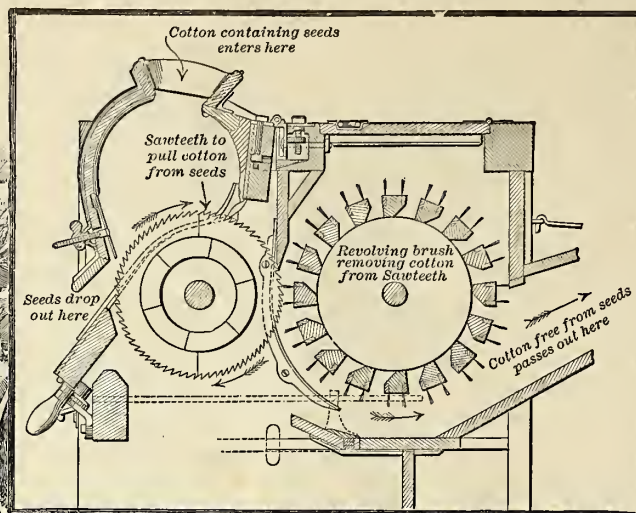
In Florida the rainfall is greatest in summer, when the sea-winds blow toward the warm land. In winter the winds tend to flow outward from the cold interior. The rainfall of our eastern coast is therefore doubly unlike that of the western coast. On the former, the amount decreases from south to north, with the heaviest rains in summer. On the western coast, the amount of rainfall increases from south to north, with the heaviest rains in winter. See charts D and E.

117. Cotton.¹

What lands that we have studied produce cotton? See lessons 41, 42, 61 and 76. Which heat belt crosses each of those lands? Is it a wet or a dry country?

Where is the cotton belt of the United States? Describe its surface. What regions are partly included in the tinted area of the *Cotton* map? What are the seasons of this cotton belt? From over what part of the sea do its rain-bearing winds blow?

Name some of the other products of the cotton district of our country. See lessons 41 and 42. Tell some of the uses of cotton.



The oil-cake which remains after the oil is pressed from cotton seeds is fed to cattle.

Texas and Georgia lead all other states in the quantity of cotton produced. The chief ports through which cotton is sent to foreign lands are New Orleans and New York. Most of it goes to England, Germany and France.

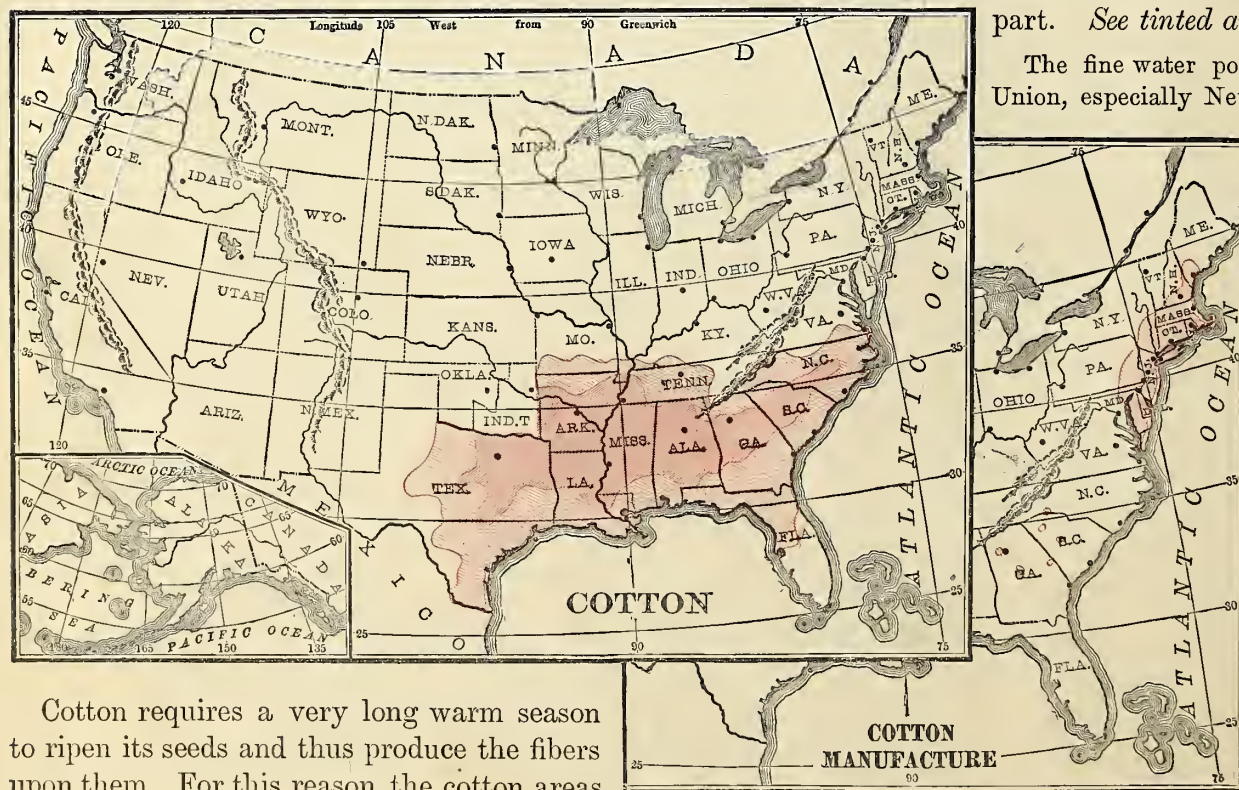
Savannah, Ga.; Galveston, Tex.; Norfolk, Va.; and Charleston, S. C., have a large export trade in cotton.

The great centers of cotton manufacture in the United States are the numerous cities and towns in the northeast part. See tinted area on the map.

The fine water power gave this portion of the Union, especially New England, an early start in manufacturing. There the rivers, when cutting through gravel beds in their valleys, have reached rocky ledges and have therefore formed falls or rapids. See lesson 33. Steam has now largely taken the place of water power, but hundreds of mills with their skilled workmen and costly looms still hold the cloth-making industry chiefly to this district.

Fall River and Lowell (see map, page 143) make more cotton cloth than any other two cities in America. New York and Boston

handle much of the raw cotton used in the great cloth-making states. Many cotton mills are now running in the cities of the South, and the outlook is very bright for a thriving industry there.



Cotton requires a very long warm season to ripen its seeds and thus produce the fibers upon them. For this reason, the cotton areas are found in the hot and the warm belts, but only in the parts having plentiful rains.

¹ The reddish tint on the above *Cotton* map outlines the district known as the cotton belt of the United States. The darker the tint, the larger the yield.

The United States ranks first in the production and export of cotton. About one third of the crop is used in the mills of our own country, but raw cotton to the value of about \$250,000,000 is exported annually from the United States. Three fifths of the quantity go to the mills of Great Britain. A large part of the rest goes to Germany and France. India¹ and Egypt send large amounts to European countries.

England leads in the manufacture of cotton cloth. The United States holds second place, and Germany third. Our country imports fine grades of cotton cloth from England, Germany and France.

118. Wheat.

There are several kinds of wheat. Some thrive in scanty soil; others, in deep alluvial soil. Some grow best in hot lands; others, in cooler climates. For this reason, wheat is a wide-spread grain. It has been cultivated from the earliest times, and is thought to be native to Asia.

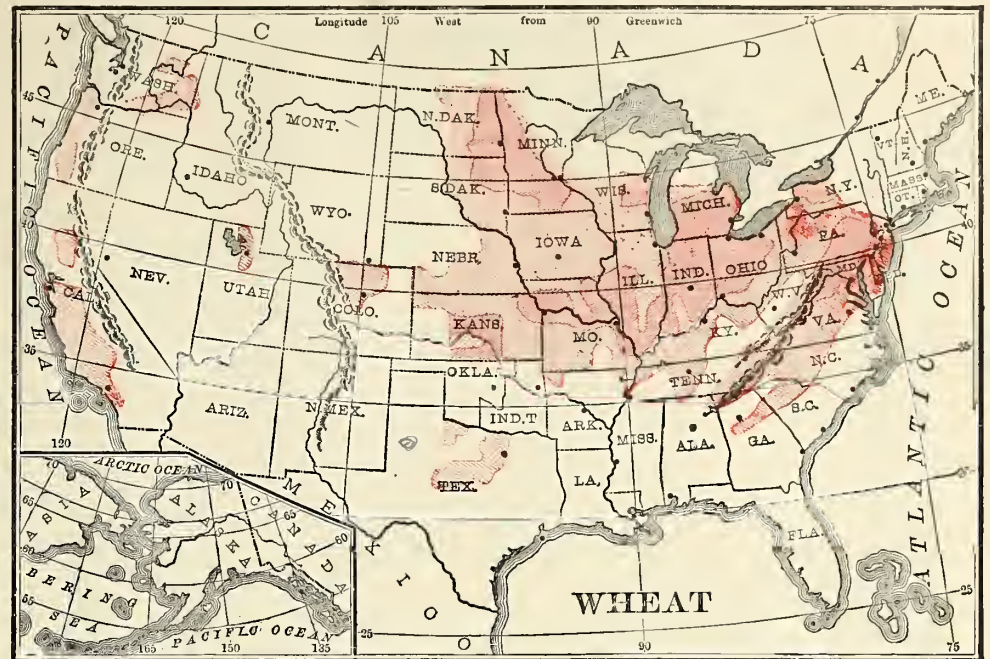
The wheat seed consists of a grain inside a thin husk. The inner part of the grain is used in making fine white flour, but the entire grain makes wholesome though darker flour.

Wheat is hardier than corn,—not being so easily injured by frost or by cool weather. For this reason the cooler prairies, extending far northward even into Canada, yield immense crops of wheat but scarcely any corn. Moreover, wheat thrives in the warmer prairies and is a valuable product as far south as Texas.

Among the best wheat regions in our country are the following: the northern prairies in Minnesota and the Dakotas; the district lying between the Ohio river and the Great Lakes and stretching southwest into Kansas; the valley of California; the states between lake Erie and the mouth of Chesapeake bay.

Minneapolis has the largest flour mills in the world. Among American cities, St. Louis ranks next to Minneapolis in the production of flour. Along the water way of the Great Lakes, the Erie canal and the Hudson river,—from Chicago to

New York,—every great city has extensive flouring mills. Chicago and the other large lake ports handle hundreds of shiploads of wheat each year. The wheat crop of the valley of California, either in the form of grain or of



flour, passes chiefly through San Francisco; and this city ranks second in the Union in the export of these products. New York¹ ranks first, and Baltimore third.

The United States leads the rest of the world in the production of this important cereal. France, India and Russia also produce very large crops.

Wheat and flour rank next in value to cotton as exports from the United States. Like cotton and corn, they find a foreign market chiefly in the British Isles. France and Belgium also buy many shiploads of our wheat.

119. Indian Corn.

Indian corn does not thrive in places having late spring frosts or cold summer nights. The growing plant is quickly killed by frost, and cold nights greatly hinder the growth of the grain. Moreover, if the summer

is very rainy or foggy, the corn is liable to mold.

Corn is wide-spread over the eastern half of our country, except in the marshy or sandy lands along the

¹ In India, cotton cloth was made by hand for fully 2000 years before America was settled by white people.

¹ Whenever the commerce of New York is mentioned, we should not forget that Jersey City forms part of the port of New York.

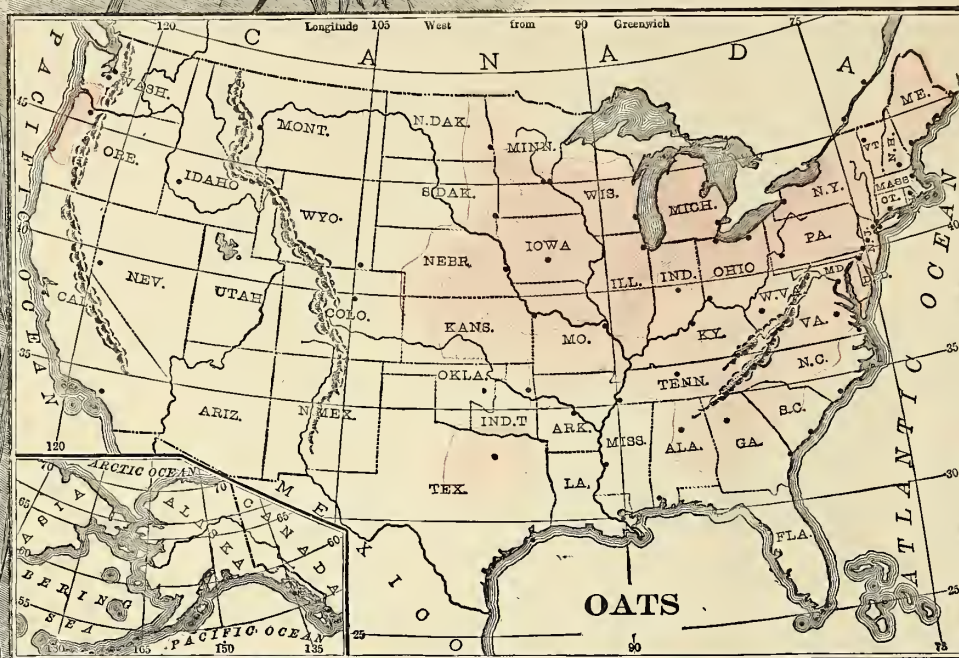
gulf of Mexico, and in the extreme north where early frosts are common or where there are dense forests. The best region for the growth of corn is in the southern half of the prairies. This corn belt stretches east and

When the early white settlers came to America, they found here a new kind of grain raised by the Indians. The white men gave it the name of *Indian corn*. Since that time this valuable grain has spread to nearly all fertile lands having long and hot summer weather.

How did the Indians prepare the forest lands for cornfields? See lesson 86. Why was it necessary to kill the trees?

120. Oats, Barley and Rye.

Oats are not native to America and have not been so widely sown in our country as corn or wheat.



west, passing between the cities of Chicago and St. Louis. It reaches the border of the Allegheny plateau on the east and the great plains on the west.

Describe the seasons in this corn belt. What winds bring most of the rainfall to the region?

Corn meal is widely used in cooking, and is a healthful and nutritious food. When the grain is broken, hulled and boiled, it is called *hominy*. In some parts of the country, *hulled corn*

and milk form a favorite dish. *Green corn*, or *sweet corn*, is often boiled on the cob and is thus used for food. A large amount of sweet corn is canned for market.

Great quantities of corn are used to fatten live stock, especially hogs and cattle. There is more live stock in the corn belt than in any other part of the United States.

Chicago and the other large lake and river ports serve as centers for the collection and distribution of corn. New York and the other great eastern seaports carry on a large foreign trade in this grain.

The United States supplies the larger part of the corn of commerce. This grain is sent chiefly to the British Isles and Germany, to help feed the millions of people in the workshops of those countries.



In recent years, however, the crops of oats have greatly increased and are now very valuable.

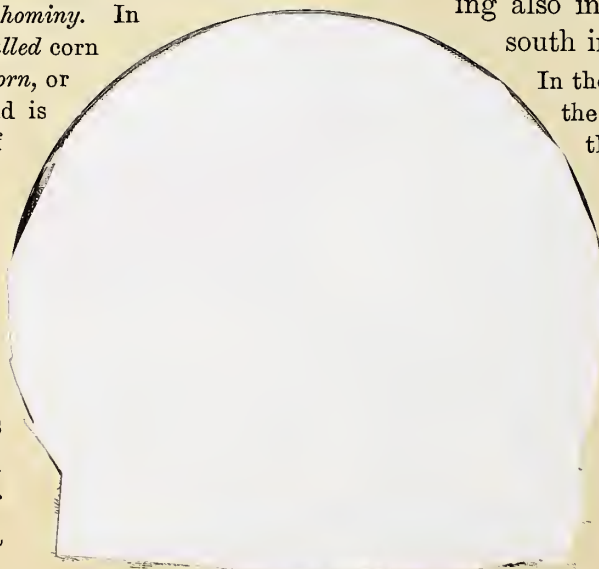
Oats are much harder than corn, — often growing in a poorer soil and a colder climate, but thriving also in the fertile prairies and still farther south in the coastal plains.

In the United States, as well as in other parts of the world, the oat crops are largest in about the same districts that produce the most wheat and corn. Nearly all the oats exported from our country are sent to England.

Barley and rye are hardy grains, but they do not take a leading place among the cereal crops of the United States. Rye is an important food-product in Russia, Germany and other parts of Europe.

121. Tobacco.

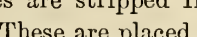
The tobacco of commerce consists of the dried, or *cured*, leaves of several species of plants. Some of these grow to the height of six feet or more and bear large coarse leaves, on their simple upright stalks.



Corn Harvest in the Azores.

The most common mode of curing tobacco is as follows: The tall stalks are cut off close to the ground, and the plants are then hung up to dry on long rods in the curing houses or in the fields.

After a time the leaves are stripped from the stalks and are bound in small bundles. These are placed in heaps on the floor to heat slowly till certain changes take place in the leaves. They are then ready to be made into cigars, snuff or other tobacco goods.



The chief tobacco districts in the United States are the Ohio river valley, the pied-mont slopes east of the Blue ridge, the district crossing from lake Ontario to Chesapeake bay, and the Connecticut river valley.

Louisville is a famous tobacco market. New York, St. Louis and Richmond are great manufacturing centers for tobacco goods. All the gold mined yearly¹ in our country would not pay for the cigars and cigarettes made in New York alone.

The United States raises more tobacco than any other country. India, Hungary, Russia, and both the East and the West Indies supply large quantities of tobacco.

Our country has a large export trade in *leaf tobacco*. Immense quantities are sent through the ports of New York and Baltimore to the manufacturing countries of western Europe.

122. Forests.

Only a few trees grow on the Western plains or in the Basin region of our country, because the rainfall there is so light.

Large areas in the prairies are treeless, but trees grow wild in the lowlands along the rivers, and many have also been planted wherever the land is settled.

The soil in most parts of the prairies is very fine and compact. Such soil is not so well suited to forests as the looser soil of highlands or of moist sandy plains. Fine dark soil, like that of the prairies, is found in the treeless plains of southern Russia.

The eastern half of our country, except portions of the prairies, is quite heavily wooded and yields lumber of many kinds. The forests around the upper three of the

¹ The annual yield of gold is about fifty million dollars.

Great Lakes consist mostly of pine, spruce and maple, but other kinds of trees also abound there.

In the autumn, bands of lumbermen go into these forests, locate camps, lay out roads, clear snags from the streams, and thus make ready for the work of getting out logs or timber. All through the winter, trees are felled and then chopped or sawed into logs of the proper length. These are hauled to the banks of streams and there piled up to await the time of the spring thawing.

When the streams are flooded and free from ice, the logs are floated down to the mills and there sawed into lumber, such as boards, joists, beams and planks.

Which states are in the lumber region around the upper three of the Great Lakes? *See the darker shading on the map.* What other valuable products are

found near Lake Superior? *See lesson 37.*

Streams from this great forest region flow to Minneapolis, and that city has grown to be a great lumber market. Hundreds of thousands of barrels are made there each year to hold the flour which the mills produce. Several branches enter the Mississippi below this city and float logs down to the mills in many other river ports.

Numerous saw-mills are located on the small logging rivers which flow from the forests into the Great Lakes. These mills supply lumber to the ports on the lakes. Chicago has become one of the leading lumber markets in the world.

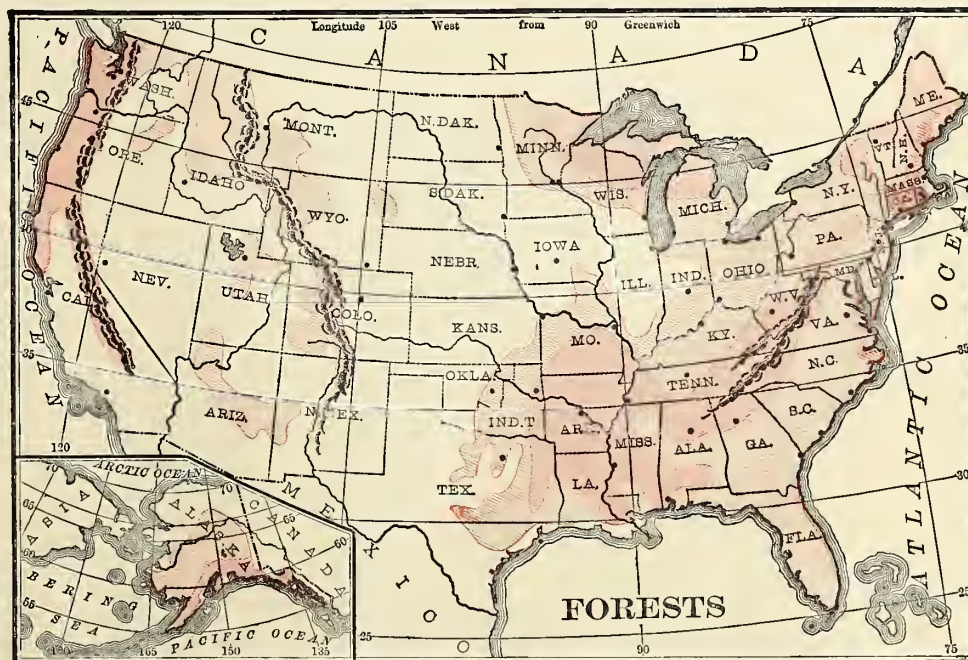
Many cities in the lake region manufacture furniture. Among these Chicago and Grand Rapids rank highest.

The soft-wood forest belt extends eastward across New York and New England. This eastern portion has long been famous for its lumber. Bangor has grown to be a great lumber market.

This city is located on the Penobscot river, whose branches reach far into the forest area, and whose valley has been slightly drowned, making the stream as far up as Bangor navigable by large sea-going vessels.

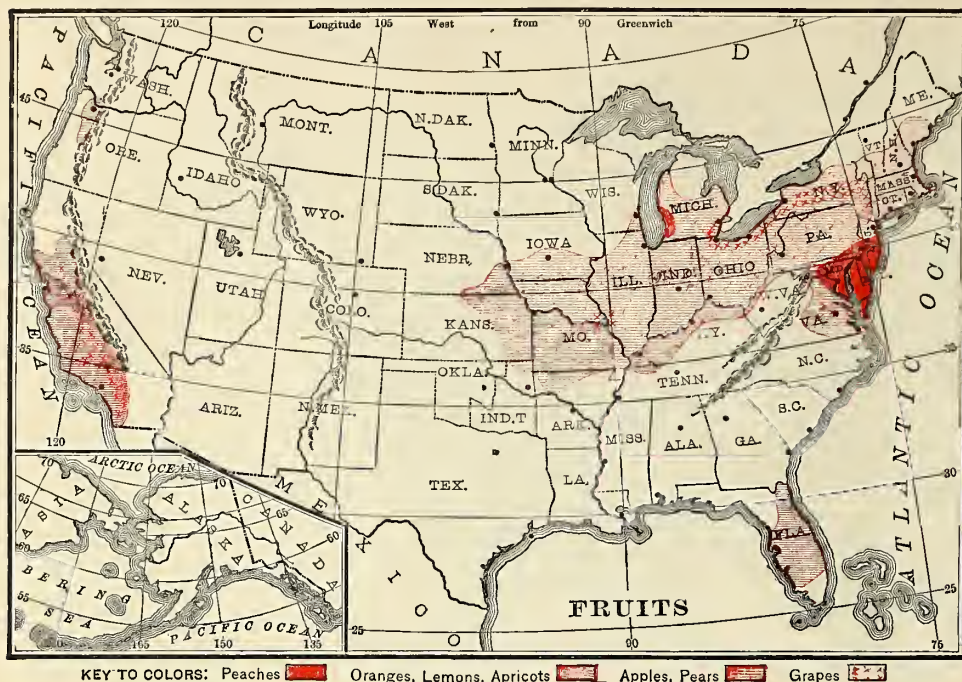


Lumber Camp in Maine.



¹ The annual yield of gold is about fifty million dollars.

The Appalachian highland is forested with both soft-wood and hard-wood trees. Forests of hard-wood trees abound in the states of the Ohio basin.



The hard-wood forests in the states which border on the Great Lakes have given this region the lead in the manufacture of agricultural implements, carriages and wagons. Great forests cover a large portion of the Atlantic and Gulf coastal plains and extend far into Texas.

What have you read about the forest products of the Atlantic coastal plain? See lesson 42. What valuable forest trees grow on the Gulf coastal plain? See lesson 41.

What kinds of lumber are sawed in the mills around Puget sound? See lesson 28. Where is redwood found?

The United States produces more lumber, and manufactures more woodenware, than any other country in the world does.

123. Fruits.

The United States is bountifully supplied with fruits. Some of them are wide-spread, but others are confined to small areas. The most important peach areas in this country include the coastal plain from the Potomac river to the Hudson; Georgia and the states bordering on lake Erie.

This peach district is near the northern end of the Atlantic coastal plain. There the canning, packing and shipping of fruit form a very important industry. There are extensive peach areas in California, Missouri and Arkansas.

There are several well-known apple areas. One extends the entire length of the Ohio valley and for quite a distance up the Missouri valley. The districts east of lake Michigan and southeast of lake Erie are famous for this fruit. It abounds also in all the states eastward to Maine. Pears have about the same range as apples.

Large quantities of grapes grow along the southern shore of lake Erie and in the Mohawk valley. This fruit is sold mostly in boxes to the people in the great eastern cities. The grapes of California are marketed largely in the form of raisins, but great quantities of the grapes are pressed for their juice which is made into wine.

Raisins are sun-dried grapes. The curing of the fruit requires very hot and dry weather. A few days of rain in the curing season may spoil a year's crop. California is noted both for its raisins and its grape wines.

Southern California and Florida have many orange and lemon groves. These districts supply the best oranges found in our markets.

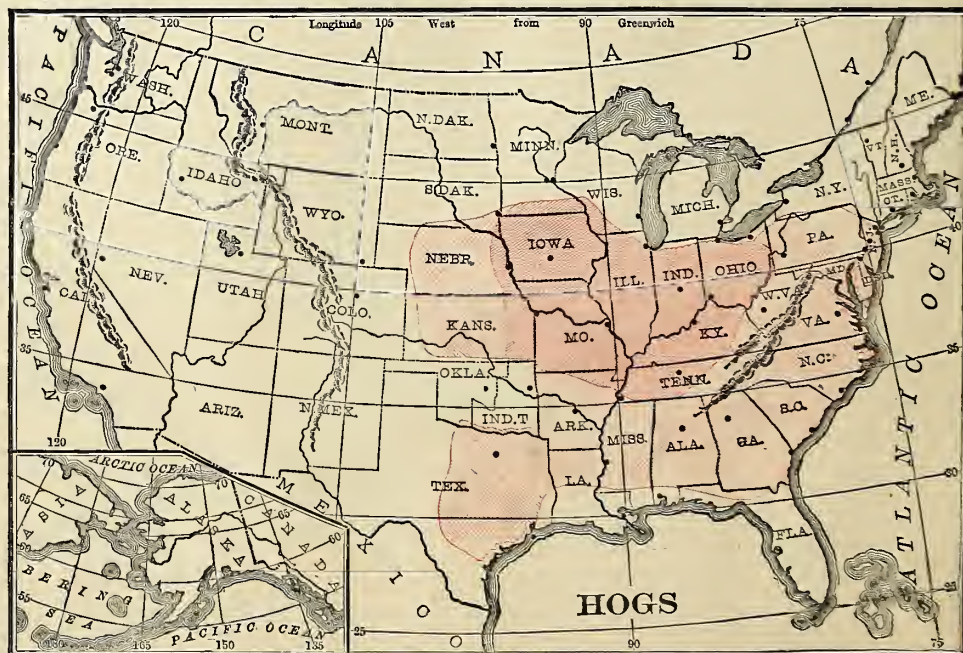
Most of the lemons and oranges imported into the United States come from Italy. The West Indies and Central America supply bananas.

124. Horses, Mules and Hogs.

Horses and Mules. Horses were first brought to America by Spanish explorers. These useful animals are now raised in nearly all grassy portions of the New World. Mules also are common in most parts of America, but chiefly in the warmer regions.

Horses and mules are raised in greatest numbers in the most fertile districts, where there is work for them on the farms. There are about one third as many horses as cattle in our country.

Hogs. Many hogs are raised in every state in the Union, but chiefly in the districts which produce the most

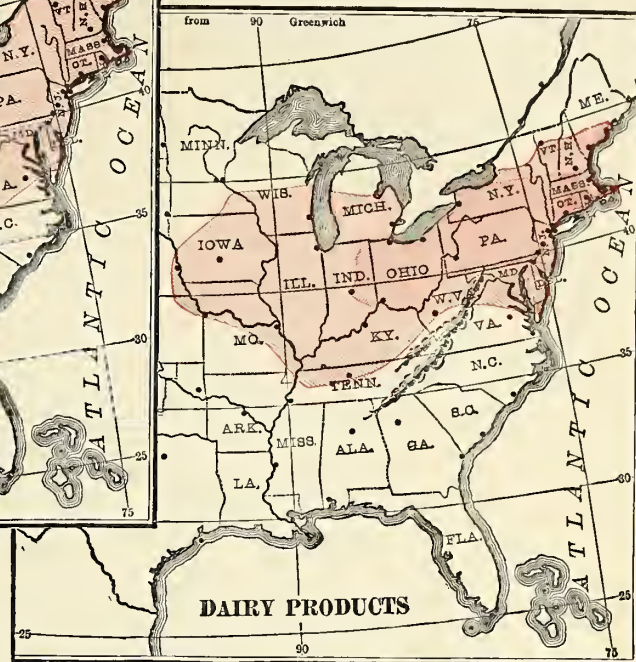
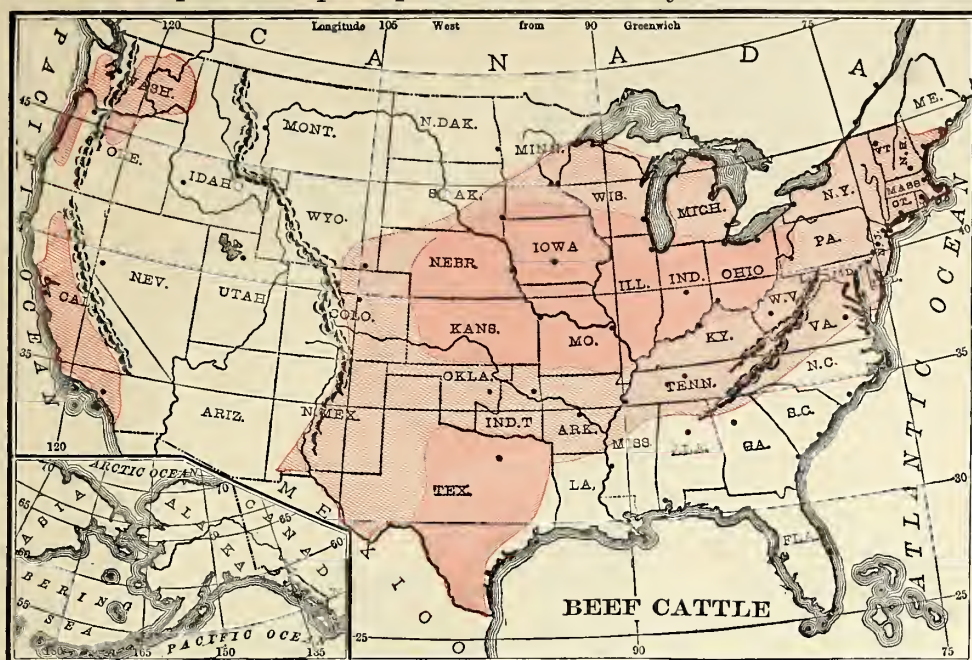


corn. This grain is the best fattening-food for swine. Millions of bushels are used yearly for that purpose.

The principal pork-packing centers are the cities of the prairies, especially Chicago and Kansas City (Kansas).

Immense quantities of pork, bacon and lard are sent abroad, chiefly to England, Germany and other countries of western Europe. The pork products sent each year

The hides of cattle are tanned and changed into leather. One part of the tanning process consists in soaking the hides in water in which certain kinds of bark have been steeped. Hemlock bark is often used, and as hemlock trees abound in Pennsylvania, New York, Michigan and the northern New England states, most of the tanning is done there.



from our country to England alone have a higher value than all the gold mined here in the same time.

The United States produces about as much pork as is produced in all Europe.

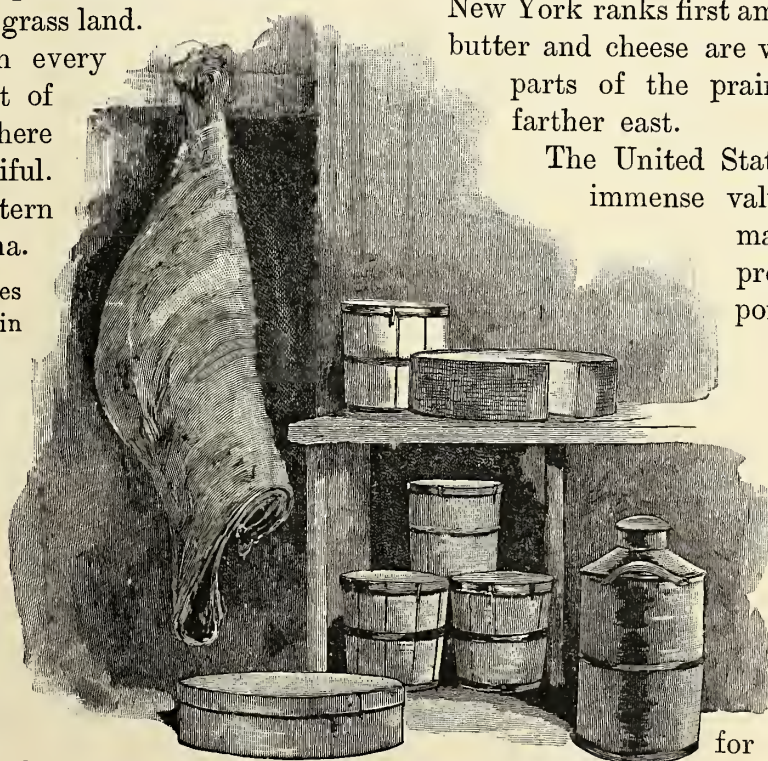
125. Cattle and Dairy Products.

Cattle are not native to any part of America, but they now thrive in great numbers on the prairies, the Western plains, the pampas, the campos and the llanos, — in short, wherever there is good grass land.

There are many cattle in every state in the Union, but most of them are on the prairies, where grass and corn are plentiful. Large herds graze on the Western plains, from Texas to Montana.

The great state of Texas raises more cattle than any other state in our country. Illinois ranks second; but in proportion to size, this state ranks first.

As the population of the Western plains is small, nearly all the cattle raised in that region are sent to the cities farther east, — to Chicago and Kansas City (Kansas), where the beef is dressed for market. The prairies are more thickly settled, and the cattle of that portion of the country are therefore mostly used near the places where they are raised. Chicago has grown to be the largest meat-market in the world.¹



Beef and Dairy Products.

What are some of the articles made of leather?

More boots and shoes are made in Massachusetts than in any other state, and Boston therefore is a leading leather market. Philadelphia deals largely in leather.

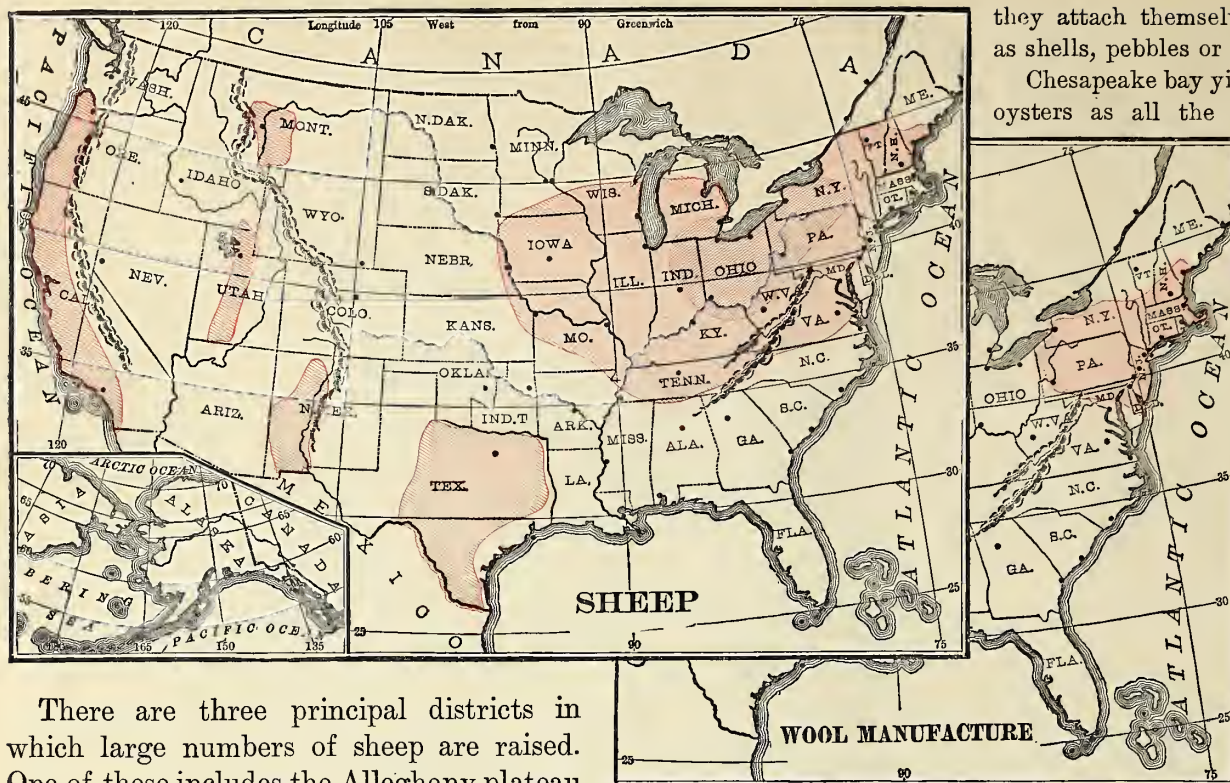
Butter, cheese and milk are known as *dairy products*. New York ranks first among the dairy states; but milk, butter and cheese are valuable products in nearly all parts of the prairies, as well as in the states farther east.

The United States exports beef and cattle of immense value to Great Britain and Germany. Large quantities of dairy products and leather also are exported to the same countries.

126. Sheep.

Wool ranks in value and usefulness next to cotton as a cloth-making fiber, but in our country more woollen than cotton cloth is made. All the gold and silver ore mined each year in the United States would not pay for one third of the woollen cloth made here in the same time.

¹ The meat products of this city have a value of about \$200,000,000 a year, — or twice the value of the yearly output of gold and silver in our entire country.



There are three principal districts in which large numbers of sheep are raised. One of these includes the Allegheny plateau and extends westward over the prairies; another is in Texas; the third lies west of the Sierra Nevada. There are also many sheep in the Rocky mountain states.

In our country most of the woolen mills, as well as the cotton mills, are in New England, New York and Pennsylvania.

Boston is a great wool market, because it distributes this fiber to the mills of New England. In the manufacture of woolen carpets, Philadelphia ranks first in the world.

In the production of wool the leading regions of the world are eastern Australia and New Zealand; the Plata river basin; Great Britain; the steppes of Russia; and the United States.

Our country must import wool and sheepskins, because it uses more than it produces; but the other regions export these products, — chiefly to Great Britain, France and Germany.

127. Fisheries.

Oysters. Oysters are salt-water shellfish and are the most valuable food product taken from the shore waters of the United States. The most extensive oyster fisheries in the world are carried on in Chesapeake bay. Several thousand boats and many thousand men are there employed. Smaller oyster beds are found along several other parts of the coast of our country.

Baltimore is the center of the oyster trade.

The oyster fisheries are scattered along the coast from Cape Cod to Mexico, — wherever the sea-bottom is firm. Young oysters die unless

they attach themselves to hard substances, such as shells, pebbles or larger stones.

Chesapeake bay yields about four times as many oysters as all the other places on our coasts.

Many of the oysters are gathered by means of tongs having long handles. In some places, dredges are dragged over the bottom to gather the shellfish.

In the oyster fisheries, France ranks next to the United States. Great Britain also has extensive oyster beds.

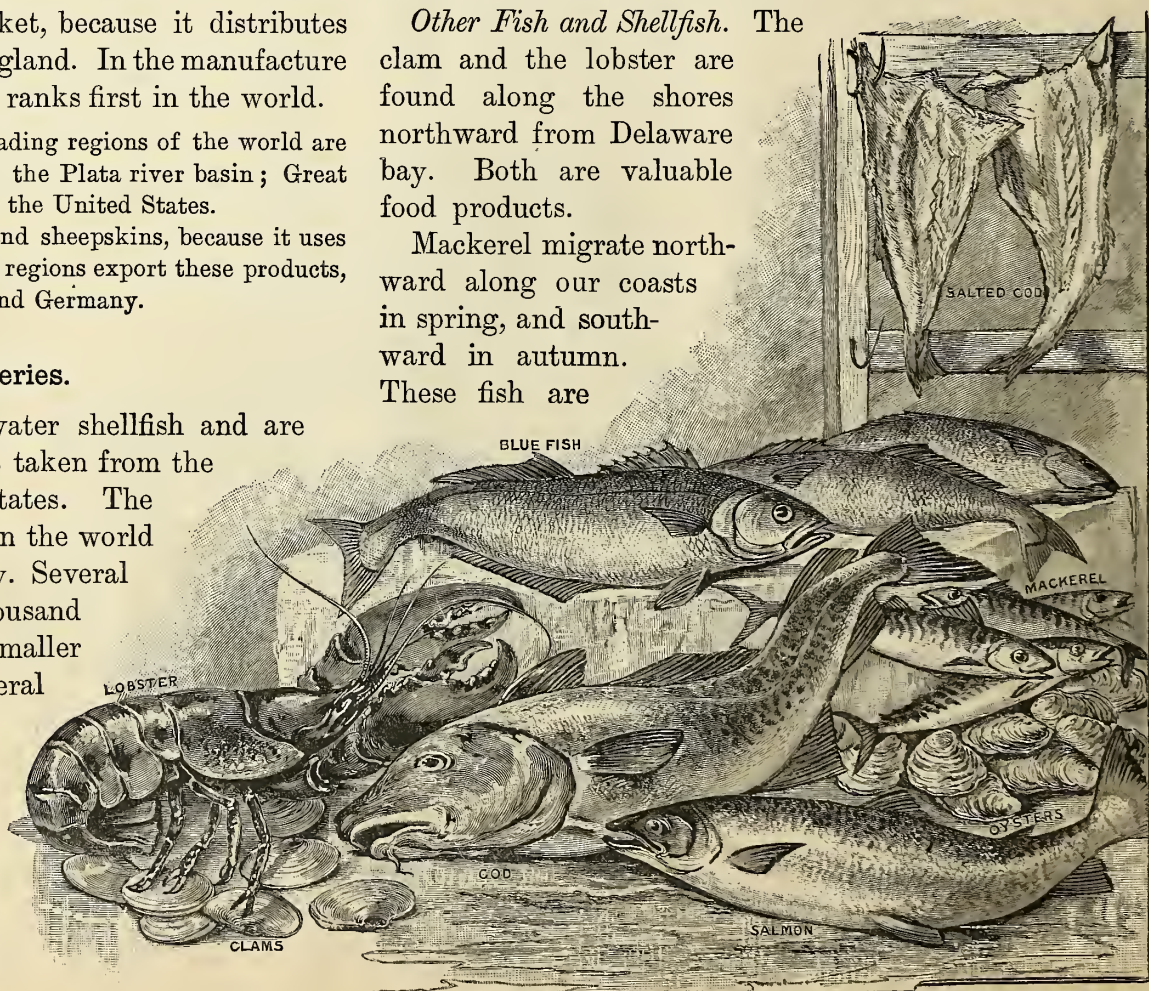
Cod and Haddock. The cod fisheries rank next in importance to the oyster fisheries. The codfish, and also the haddock and the halibut, are caught

mostly on banks, or shoal places in the sea.

Off the coast of North America, the best fishing grounds for cod and haddock are the banks of Newfoundland, and Georges banks northeast of Cape Cod. The halibut is found in about the same places as the codfish. The former is the largest of flatfish and sometimes weighs a hundred pounds.

Other Fish and Shellfish. The clam and the lobster are found along the shores northward from Delaware bay. Both are valuable food products.

Mackerel migrate northward along our coasts in spring, and southward in autumn. These fish are

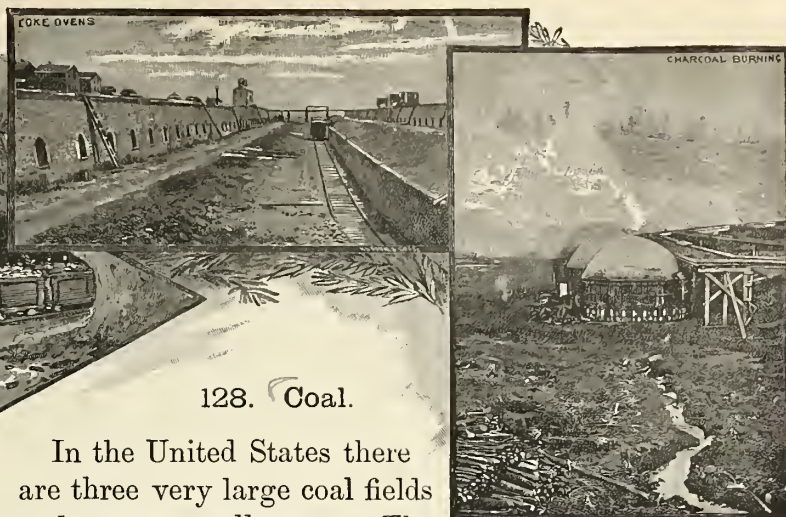


caught chiefly in large nets called *seines*. Eastern mackerel are taken between cape Hatteras and the gulf of St. Lawrence.

The salmon fisheries are a very important industry on the Pacific coast, northward from San Francisco bay. Fish of this kind enter the rivers to spawn, or deposit their eggs. The largest salmon canneries are near the mouth of the Columbia and along the coast of Alaska.

The following table shows where the principal food fishes are taken or caught by fishermen of our country. The fisheries are arranged in the order of value. The table is for reference only, and need not be memorized.

Atlantic coast: Oysters, Cape Cod to Mexico; codfish, New Jer-



128. Coal.

In the United States there are three very large coal fields and many small ones. The

most important field extends along the Appalachian highland. The second begins not far from the head of lake Michigan and reaches slightly beyond the Ohio and Mississippi rivers. The third is west of the second, beyond the Mississippi river.

The coal beds have had a remarkable history. Each bed consists of the remains of great numbers of plants, — mostly ferns and mosses. Long ages ago, when the coal regions were lowlands, these plants grew in broad swamps. A swamp may have continued for centuries making its plant-layer thicker and thicker, until buried in sand and clay that were washed over it.

After the burial of one swamp, another formed on the cover of sand and clay. Successive swamp-layers were thus buried, one over another. When they hardened, the layers of sand became sandstone; the clay changed to slate or shale; and the swamp plants formed coal. There are generally many beds of coal in a single coal field, showing that swamps formed there many times. Some of

the coal beds are only a few inches thick; others are several feet. Before steam engines were invented, coal was not very valuable.



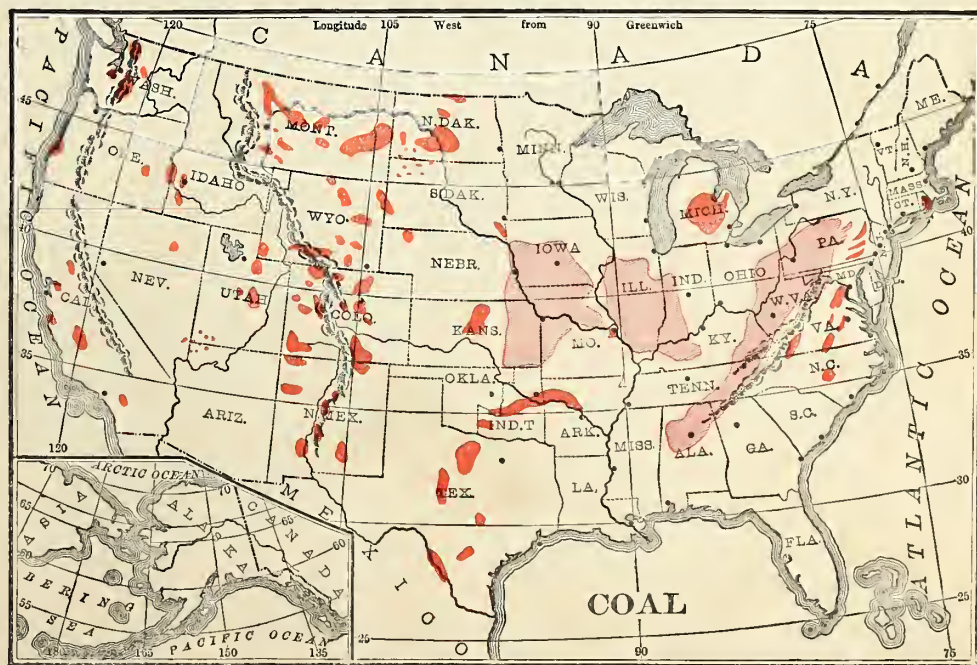
KEY TO COLORS:
Oysters ■ Cod, Clams, Lobsters, Mackerel, Haddock ■ Salmon ■ Sponges ■ Lake Fish ■

sey to the banks of Newfoundland; clams, Chesapeake bay to Maine; shad, Florida to Maine; lobsters, Delaware bay to New Brunswick; mackerel, cape Hatteras to gulf of St. Lawrence; haddock, same as cod; bluefish, Cape Cod to Mexico; alewives, Georgia to gulf of St. Lawrence; squeteague, Cape Cod to Mexico; crabs, Chesapeake bay to Long Island; sponges, Florida; menhaden, North Carolina to Maine; mullet, North Carolina to Mexico; herring, Marthas Vineyard to Newfoundland; striped bass, North Carolina to Rhode Island; Spanish mackerel, New York to Mexico.

Pacific coast: Salmon, San Francisco bay to Alaska; sea bass and flatfish, entire west coast of our country, except the strait of Fuca. The Pacific coast fisheries, except for salmon, have not been well developed.

Great Lakes: Whitefish, lake herring, lake trout, in all the lakes; pike perch, in lakes Ontario and Erie.

Gloucester, on the coast of Massachusetts, is the greatest fishing port in the Union.



Pennsylvania, at the northern end of the Appalachian coal field, supplies more than one half the coal used in the United States. Illinois ranks second, and Ohio third.

Pennsylvania furnishes nearly all the *anthracite* coal mined in the country, as well as a large part of the soft, or *bituminous*, coal. The hard coal is found near the northern end of the Allegheny ridges. The coal of the Illinois field aided greatly in the settlement of the prairies where wood was scarce.

Large quantities of soft coal are put into ovens that shut out most of the air. These are heated till certain gases are driven off or burned. By this process the coal is changed to *coke*, which is better than soft coal for heating purposes.

Charcoal is made by burning or charring wood to which very little air has access. Charcoal resembles true coal,

129. Iron.

There are four principal iron ore districts in the United States. These are all in old worn-down mountain regions.

The most productive district is near the shores of lake Superior. The other districts are the Allegheny ridges in Pennsylvania; the Adirondack mountains in New York; and the southern part of the Appalachian highland in Alabama.

The process of extracting iron from its ore is

called *smelting*. The usual mode of smelting is as follows: The ore and coal, with some limestone, are placed in a tall furnace, and the coal is then set on fire.¹ A hot blast of air is forced through the burning mass to strengthen the fire. As the iron of the ore melts, the heavy liquid settles to the bottom of the furnace and is drawn off, while the impure matter, or *slag*, floats on the surface.

The furnace through which the blast of air is driven is known as a *blast furnace*. The molten iron is usually run into molds where it cools in short bars weighing about one hundred pounds each. In this form the metal is called *pig iron*, and is ready for shipment

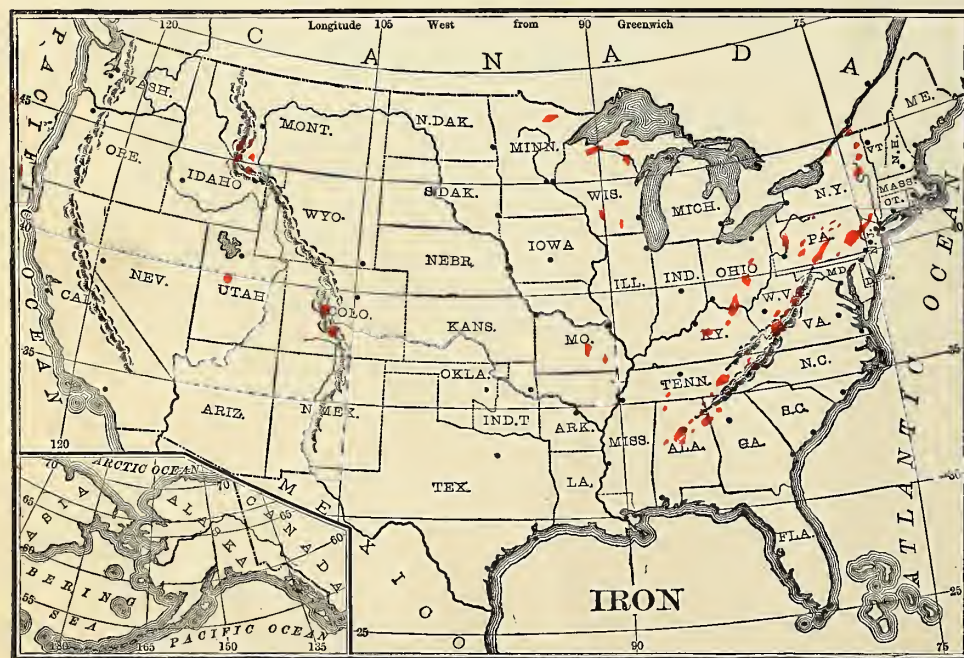
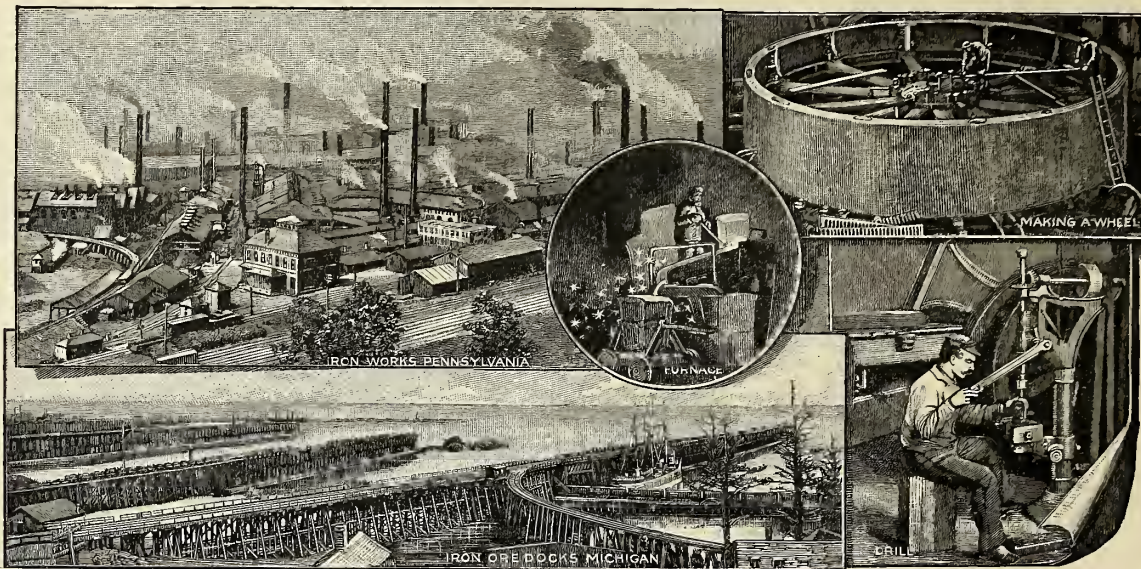
to the foundries where it may be cast into the form of stoves, hydrants, posts and scores of other objects.

Iron that is to be used for certain purposes is put through a series of heating processes which change it into steel. This is used in making rails, engines, steamships,

cutlery, tools and other articles that must withstand a great deal of wear and strain, or that must take keen edges.

The iron ore of the lake Superior district is plentiful and pure. It is therefore so valuable that it competes

¹ In Pittsburg and some other cities, natural gas is used for fuel. Limestone mixed with the iron ore causes it to *fuse*, or melt, more quickly.



but the former is much the lighter and the more porous.

All the large cities in or near the coal fields are important markets for coal. Among the cities having the largest trade in this product are Philadelphia, Pittsburg and Chicago.

Great Britain, Germany, Austria, France and Belgium have extensive coal beds and iron mines, and have therefore taken a leading place among the manufacturing countries of the world.

with the iron ores in the other districts, even though heavy freight charges must be paid to transport it great distances.

Most of the lake Superior ore is carried by steamers to the various lake ports, but part is sent by rail. The lake ports use only about one third of the ore in their own manufactures. The rest is sent to inland cities, mostly in the states which border on the Great Lakes.

A picture on the opposite page shows some of the great docks built for shipping ore from the lake Superior district.

The principal iron manufacturing centers are in the north-east quarter of the Union, near the coal fields and the iron mines. Pittsburgh and the cities near by form the most important district. Chicago and other lake ports, as well as Philadelphia and the other great seaports of the Atlantic coast, have extensive iron mills and foundries. Among the leading articles are rails, locomotives, boilers, hardware, cutlery, and armor plates for steamships.

The United States leads all other nations in the production of iron ore and in the manufacture of iron and steel articles. Great Britain ranks second; Germany, third.

The United States exports iron goods to Cuba, Mexico and other American countries, as well as to England.

Large quantities of tinned iron, cutlery, rails and other steel or iron goods are imported into our country from Great Britain and Germany.

130. Petroleum and Natural Gas.

Crude petroleum comes in a liquid state from the ground.

Petroleum is thought to result from the decomposition of plants and animals buried ages ago in the rock layers. The oil is now reached by sinking pipes down to the oil-bearing layers of porous rock. Some of these pipe-wells are a fourth of a mile in depth. Thousands of wells have been sunk, but many of these no longer yield oil. Others yield a few barrels a day. The average flow is perhaps from fifty to seventy-five barrels daily; but in rare instances, more than 1000 barrels of oil have flowed from a single well in a day.

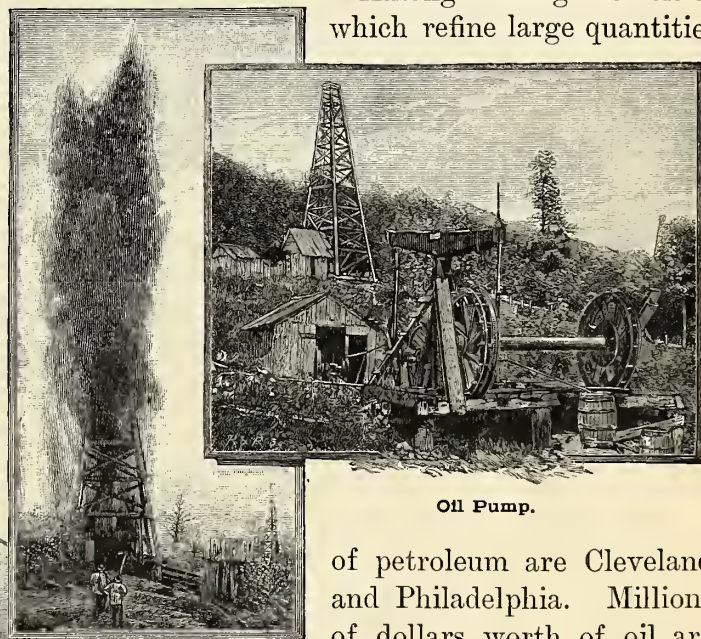
When the natural flow of a well ceases, oil is often obtained by pumping. Dynamite is sometimes exploded at the bottom of the wells. This breaks up the porous rock and in many instances causes the oil to flow very freely, although at times the wells are ruined by the explosion. One of the pictures shows a "shot well" at the moment of the explosion. A great column of oil is thrown into the air.

When petroleum is heated, it gives off successive vapors as the liquid becomes hotter and hotter. These vapors are condensed and then form gasoline, naphtha, benzine, kerosene, and other useful liquids. Vaseline is made from the residue left in the vats after heating. Lubricating oils and paraffin are valuable products of petroleum.

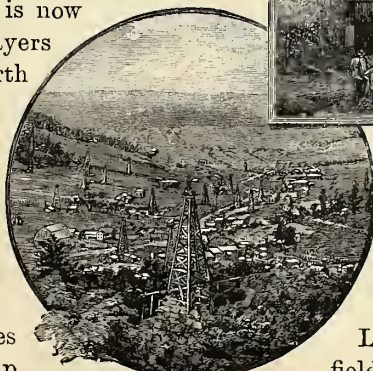
There are two well-known oil fields in the world,—one in the region of the Caucasus mountains; the other in the northern portion of the Allegheny plateau and still farther westward in Ohio. The American oil region is situated mainly in the upper Ohio basin. It produces most of the petroleum used in the world.

Pennsylvania leads the other states in the production of crude oil. Ohio ranks second. About six sevenths of the oil-yield of the Union comes from these two states. New York, West Virginia, Colorado and California have valuable wells.

Among the great cities which refine large quantities



Oil Pump.



Oil Region, Pa.

A Shot Well.

of petroleum are Cleveland and Philadelphia. Millions of dollars worth of oil are sent each year to the countries of western Europe and southeast Asia, mostly through the ports of New York and Philadelphia.

Long pipes have been laid from the tanks in the oil fields to the cities in which the petroleum is refined. Some of these pipes are hundreds of miles in length. The oil is sent through them by means of powerful force pumps.

A large amount of oil is transported in great tanks placed on cars. Much of it is also shipped in bulk in barges or steamers.

The petroleum exported each year from the United States is of greater value than the gold mined here in the same time. Great Britain, France, Germany, Japan and India are among the best customers for American oil.

In the oil fields, and extending somewhat beyond their limits, is found *natural gas*. This gas, like the petroleum, is obtained by sinking pipes in the ground.

Natural gas in the ground is not stored in caves or other great cavities, but in porous rock, such as sandstone or limestone. Layers of shale, or clay rock, over the porous rock prevent the gas from escaping.

The most valuable gas wells in the United States are in Pennsylvania, Indiana and Ohio. In these states, the low cost of natural gas has in recent years caused very rapid growth in manufactures.

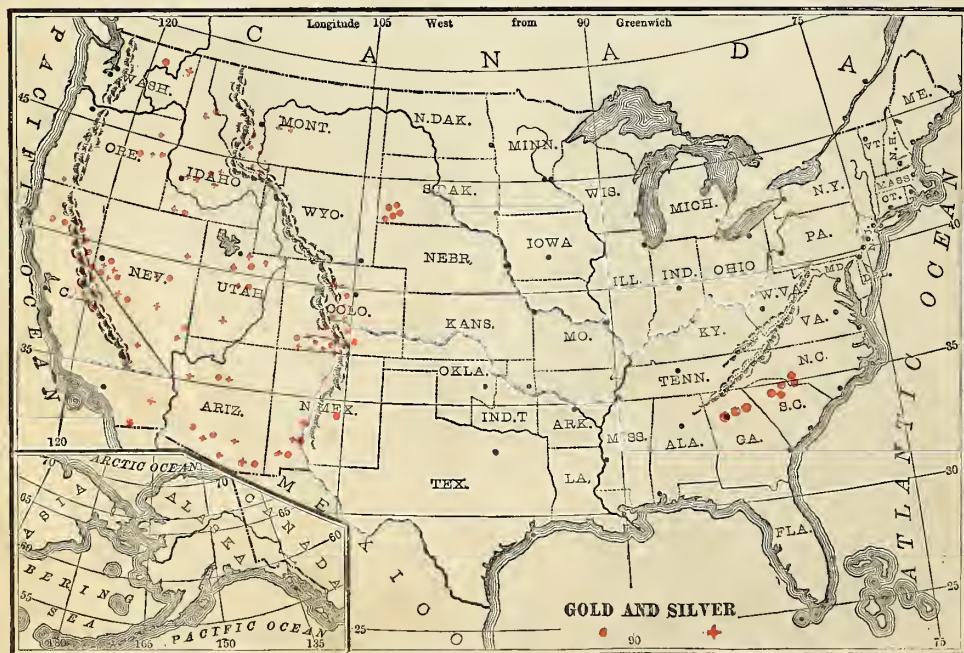
Natural gas is used chiefly for heating purposes. The gas can be regulated to give strong and steady heat, and this fuel is therefore of great value in iron mills and glass-works. It is also used as fuel in dwellings near the gas regions.

Many of the wells which once gave out gas under great pressure have now run out. Others are fast becoming weaker. Still others have been flowing for years.

Natural gas and petroleum doubtless have a common origin in the decay of plants and animals in ancient rock layers.

131. Gold and Silver.

Gold and silver are called *precious metals*, but they are

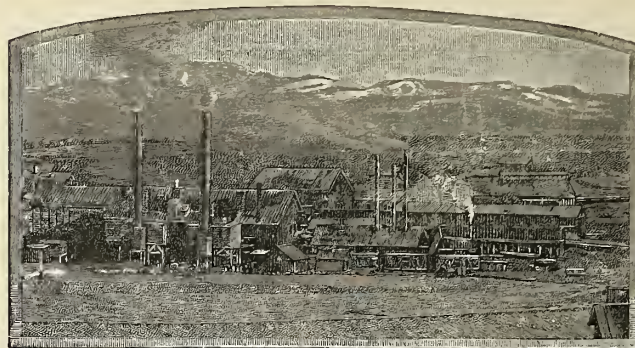


not nearly so useful as iron. The value of the precious metals is largely due to their scarcity.

Which of the coins of the United States are made of gold? Which are made of silver? Name some other uses of gold and of silver.

What have you learned about the gold-bearing gravels of California? See lesson 35.

Gold is found pure in nature. It is most often taken from veins of quartz rock or from old river gravels formed largely of the washings of quartz veins.



Smeltery.



Hydraulic Mining.

Gold is separated from quartz by crushing the rock and then mixing the mass with quicksilver and water. The gold and quicksilver soon unite with each other. The *amalgam*, or compound of the two metals, is heated and the quicksilver is thus driven off, leaving the gold.

One of the pictures on this page shows a *smeltery* where work of this kind is done.

Another picture shows how a stream of water may be used to wear down gold-bearing gravel beds. Such work is known as *hydraulic mining*. The gravel, and the gold which it con-

tains, are washed into a long trough, as described in lesson 23.

The richest gold fields in the world are in South Africa and the western highland in our country; the mountains of southeast Australia; and Siberia. The gold mines of South Africa are being very rapidly developed.

Colorado leads the other American states in the quantity of gold mined. California, Montana, Nevada and South Dakota also take high rank in the production of this precious metal.

Silver is rarely found in a pure state, but is almost always combined with other mineral substances.

America supplies most of the silver used in the world. Until recent years, the chief sources of silver ore were Mexico and the middle Andes, — in Peru, Bolivia and Chile. These countries still yield large amounts of the metal.

Colorado, Montana and the states in the Great Basin take the highest rank in the production of silver ore. About two thirds of the ore mined in our country are taken from the Rocky mountains of Colorado and Montana.

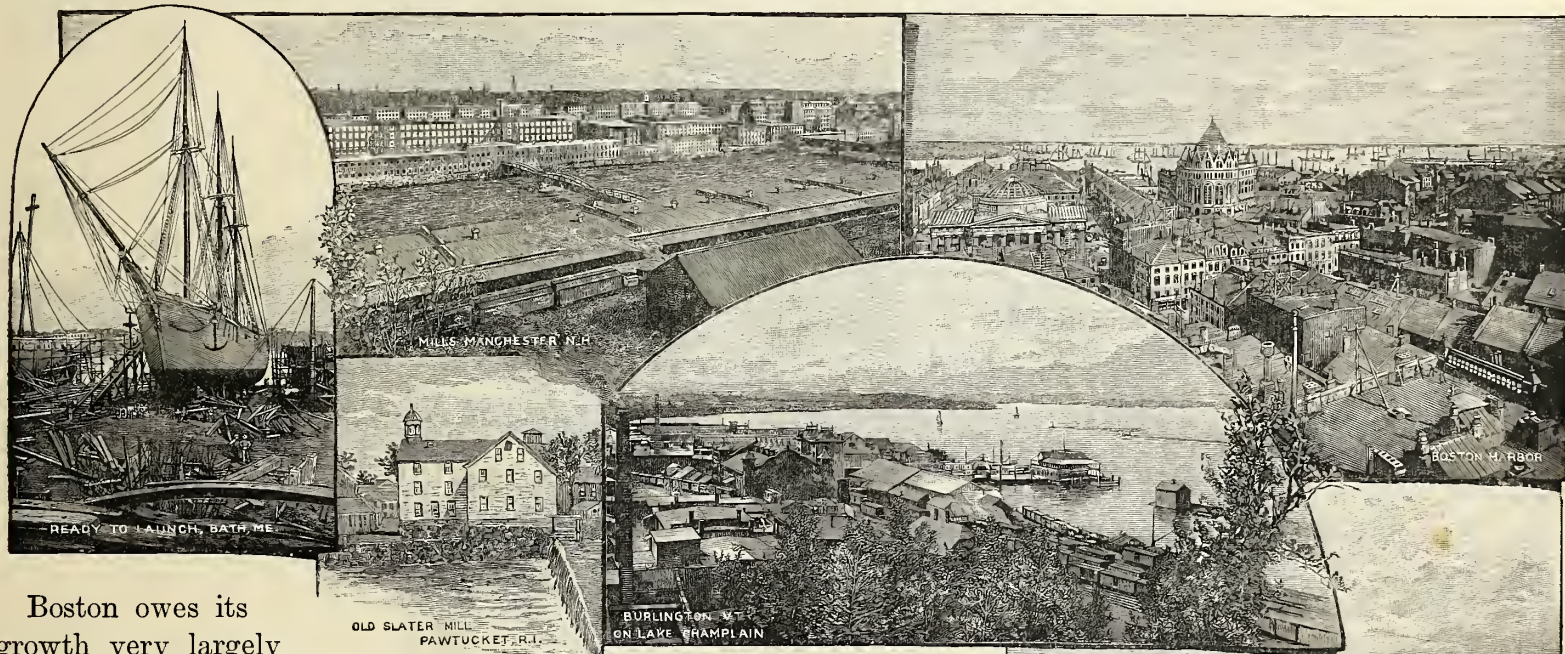
In prosperous mining years the output of gold and silver in the United States amounts to over \$100,000,000. — equal to the cost of the Suez canal. This amount, however, is far less than the value of either the corn, the wheat or the cotton raised in our country.

132. New England States.¹

With excellent water power, deep harbors, soft-wood forests and quarries of building stone, New England has grown rich and prosperous. No people in the world have done more for public schools and libraries than the people of these states.

Manufacturing is the principal industry in New England. In this group of states are made cloth, boots and shoes, hardware, firearms and other goods of various kinds.

MASSACHUSETTS. **Boston**, the chief trade center of New England, has a population of more than half a million. This city is the capital of Massachusetts.



Boston owes its growth very largely to the fact that here the railroads from the west reach the chief harbor on the New England coast. Among American cities, Boston ranks second in foreign commerce.

The mills and factories of New England use great quantities of cotton, wool, leather and rubber. Part of this material comes through the port of Boston.

This city distributes cloth and leather goods made in the mills and factories of this section. Shiploads of western products—such as pork, cattle and beef—are sent from this port to Europe.

Boston, like all other great cities in our country, has extensive manufactures. The most valuable is clothing.

There is a United States navy yard on Boston harbor. Among the cities of this state, Worcester ranks second in size. It is a railroad center and has a great variety of manufactures.

Fall River and Lowell manufacture more cotton cloth than any other two cities in America. Lawrence, a little below Lowell on the Merrimac, takes high rank in both woolen and cotton goods.

Cambridge is the seat of Harvard University.

Lynn, Haverhill and Brockton lead in the manufacture of boots and shoes.

Springfield has a United States armory, where rifles for the army and navy are made.

More paper is made in Holyoke than in any other American city.

MAINE. **Portland**, the largest city in Maine, is on a fine harbor and has a large coasting trade. In winter,

when the St. Lawrence river is frozen over, Portland serves as a port for much of Canada's foreign trade. Large cotton mills have been built in Lewiston, near falls that supply fine water power.

Bangor is a great lumber market at the head of tide water on the Penobscot river which flows from the Maine forest region.

NEW HAMPSHIRE. **Manchester** is one of the cities having extensive cotton mills on the Merrimac river. Locomotives also are made in this city.

Concord, the capital, is well known for the granite which is quarried in its vicinity.

Portsmouth is the only seaport on New Hampshire's few miles of coast. A United States navy yard is situated at Kittery, Maine, opposite Portsmouth.

¹ In each of these lessons under Groups of States use first the *Review and Map Studies* (see pp. 142, 144, etc.) opposite the maps.

Do not forget to locate every place named in the text. Tell in which state each city is located; also where it is, whether near a large lake, river, bay, of, mountain range or near the sea.

Review and Map Studies.—What does the corner map of the United States on the opposite page show about New England,—its position, size, etc.? Which is farther north,—Boston or Rome?—Boston or Portland (Oregon)?

What have you learned about the surface of New England? See *lesson 33*. Why are there so many lakes and falls in this region? Which of the New England states are on the sea coast? What state borders on Lake Champlain?

Locate Cape Cod peninsula; Marthas Vineyard and Nantucket; Penobscot bay; Long Island sound.

Describe the course of the Connecticut river. Where is the Merrimac river?—The Blackstone river?

What do the maps on pages 22, 128 and 129 show about the climate of New England? Why is its climate more severe than that of the coast of Europe in the same latitude?

What are the leading industries of New England? See *lessons 117, 121, 122, 125, 127*.

VERMONT. The small rivers flowing into lake Champlain are very useful in floating logs down to the sawmills. **Burlington** has the best harbor on this lake and is a great lumber market. **Montpelier** is the capital.

Vermont produces more than half the marble used in our country; **Rutland** is the center of the marble industry. **St. Albans** is noted for its dairy products; and **Barre** for its granite.

RHODE ISLAND. **Providence**, the second city in size in New England, is at the head of Narragansett bay—a partly drowned valley. This city has great woolen mills and the largest jewelry factories in the United States. Providence is one of the two state capitals.

Pawtucket and **Woonsocket**, on the Blackstone river, have large cotton mills. In the old Slater mill of Pawtucket, cotton manufacturing in this country was first started in 1790.

Rhode Island is the only state now having two capitals. **Newport**, one of the capitals, is a famous summer resort.

CONNECTICUT. **New Haven** is the largest railroad center and port in Connecticut, and is the seat of Yale university. This is one of the cities that manufacture arms and firearms. **Hartford**, the capital, is at the head of the Connecticut river. It is famous for its steamboat navigation on the Co-

Bridgeport is a manufacturing city on Long Island sound. **Waterbury** is famous for brass manufactures. Its best-known articles are watches, clocks and pins. **Meriden** leads in the manufacture of silverplated and britannia ware.

133. Middle Atlantic States.¹

The slight drowning of ancient river valleys has made fine harbors for New York, Philadelphia and Baltimore,—three of the greatest commercial cities of the Union. The Hudson and Mohawk valleys turn much of the western export trade to New York. Several railroad lines from east to west have been built across the Appalachian highland. This highland is rich in coal, iron ore, petroleum and natural gas. The piedmont belt yields immense crops of tobacco. The coastal plain is a leading fruit district. Chesapeake bay has valuable oyster beds.

With all these advantages, this group of states has grown wealthy, and two of its cities are among the largest three in America. New York ranks first and Philadelphia third—Chicago being second.

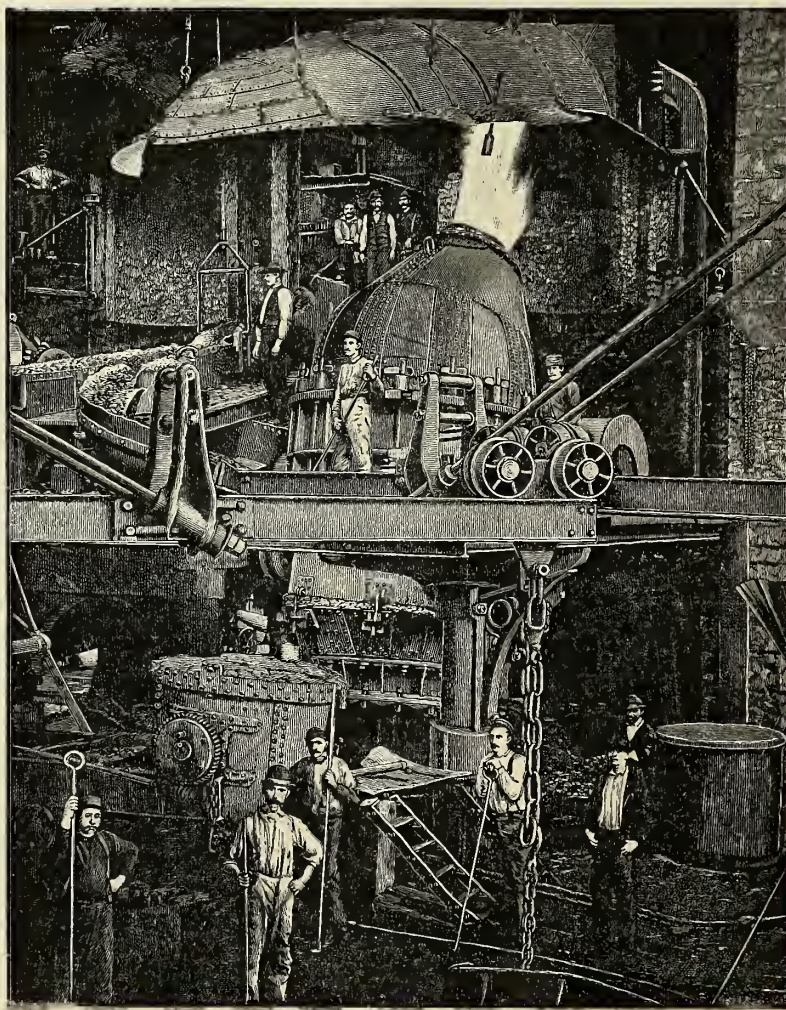
NEW YORK. New York is now the second city in population in the world. Nearly 3,500,000 people live in this city. It carries on more than half the foreign trade of our country.

The chief exports from New York are meats, cotton, petroleum, wheat and flour. Most of these are sent to Great Britain and other countries of western Europe.

New York's principal imports are—cloth from England, Germany and France; coffee from Brazil and other parts of tropical America; cane sugar from the West Indies, and beet sugar from Germany; tin plate from England; rubber from Pará; tea from China and Japan.

New York is the greatest manufacturing center in America. The total value of the manufactures of this city is greater than that of all imports into our country.

Brooklyn, a borough of New York city, contains about 1,000,000 people. In the refining of sugar, Brooklyn



Iron Works, Pennsylvania.

NOTE:—The picture shows a huge retort in which hot air is being forced through liquid iron, changing it to steel.

¹ See footnote on page 141.

2000 1790 1900
1983
9.7
11 years



ranks second only to San Francisco. The roasting and grinding of coffee and spices are important industries here, as in New York proper. Brooklyn contains a United States navy yard.

Buffalo has grown to be a large city, because it has a fine harbor on lake Erie, is at one end of the Erie canal, and is an important railroad center.

Great quantities of western products pass through Buffalo. Its principal manufactures are lumber and flour. Meat-packing is here an extensive industry.

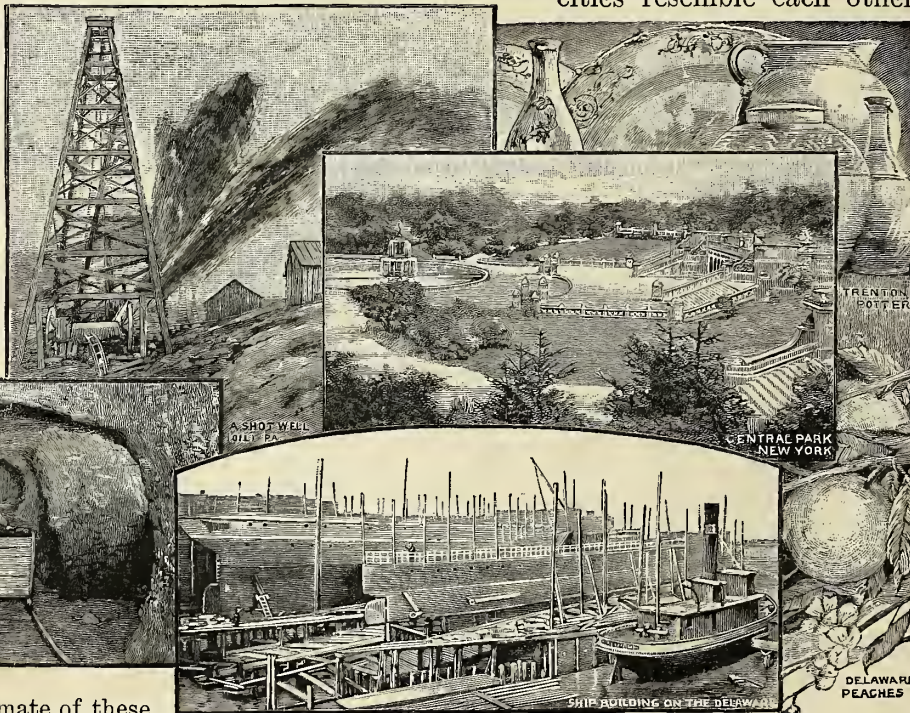
Rochester and **Syracuse** are on the Erie canal and the New York Central railroad. Rochester has large flouring mills. Syracuse is famous for its salt-works.

Albany, the capital, is an important railroad center and is near the head of tide water in the Hudson.

The United States Military Academy is at **West Point**.

Review and Map Studies.—Which is larger,—Maine or New York? Which is farther north,—New York or Chicago?—Richmond or San Francisco?

Refer to the maps on pages 128 and 129, and tell what



you can about the climate of these states. Which states of this group are partly in the Atlantic coastal plain? Which border on the Great Lakes? Name a river and a mountain range forming part of the boundary of West Virginia. What are some of the products of the coastal plain in these states? See lessons 33, 42, 122, 123 and 137.

What useful products are taken from the Allegheny ridges and plateau in this group of states? See lessons 35 and 128. What two rivers unite at Pittsburg to form the Ohio river?

Describe the main slopes of the land in this group of states. Of what state is Long Island a part?

PENNSYLVANIA. **Philadelphia** has a fine harbor on the tidal portion of the Delaware river. This city is not far from rich mines of coal and of iron ore. Philadelphia therefore exports coal, and manufactures great quantities of iron and steel goods.

One of the best sheep-raising districts in our country extends across this state and into Ohio; and Philadelphia now leads the world in making woolen carpets. There are large forests of hemlock in northern Pennsylvania, and

many tanneries have been built there. Leather goods form one of the chief manufactures of Philadelphia.

There are great cotton mills and oil refineries in this city. Along the river front in and near Philadelphia are immense shipyards. Most of the new iron ships of our navy were built here.

The foreign trade of Philadelphia is very large. The city ranks third in population among American cities.

Harrisburg, on the Susquehanna, is the state capital.

Pittsburg's leading industry is the manufacture of iron and steel goods. Among these are locomotives, steel rails, car wheels and armor plate for ships of war.

Excellent sand for glass-making is found in the upper Ohio valley, and Pittsburg is famous for glassware.

This city has a large trade in soft coal and in petroleum.

Allegheny lies across the river from Pittsburg. These cities resemble each other in their trade and manufactures, but Pittsburg is much the larger.

Scranton, **Reading** and **Erie** have large iron works.

NEW JERSEY. **Newark**, the largest city in New Jersey, has great tanneries. Patent leather is a leading product. Large quantities of jewelry also are made in Newark.

Jersey City forms an important part of the port of New York. Many ocean steamers clear from the Jersey City side of the harbor, because they can there meet the freighted trains from several railroad lines that do not enter the city of New York.

Paterson has the largest silk factories in the United States. **Camden**, opposite Philadelphia, is one of the cities having shipyards on the Delaware.

Trenton, the capital, is famous for its fine pottery.

DELAWARE. **Wilmington** contains more than one third the population of the state. The chief manufactures of the city are leather and cars.

The canning and packing of fruit form the leading industry of **Dover**, the capital of Delaware.

MARYLAND. **Baltimore** is on a fine harbor not far from the head of Chesapeake bay. The foreign commerce of this city has grown rapidly in recent years.

Baltimore is almost surrounded by fruit districts. It is not far from the tobacco regions of Virginia and Pennsylvania. The long grain belt from lake Ontario to Chesapeake bay includes the country around Baltimore. This bay supplies more oysters than are taken from any other equal area in the world.



Locate all capes.
Draw new York and Pennsylvania.

With these natural advantages, Baltimore takes high rank in the canning and shipping of fruit and oysters, and in the manufacture of tobacco articles and flour.

The United States Naval Academy is located at Annapolis, the capital of this state.

VIRGINIA. **Richmond** ranks next to New York and St. Louis in the manufacture of tobacco articles. Richmond is also a leading market for leaf tobacco.

This city is at the head of tide water on the James, and has an active coasting trade. It is the state capital.

Norfolk, the chief port of Virginia, ships great quantities of cotton. There is a large United States navy yard on the harbor, opposite Norfolk.

Petersburg and **Lynchburg** are important tobacco markets.

WEST VIRGINIA. **Wheeling** is the center of the iron

uplands of this section form one of the most productive cotton districts in the world. Corn and tobacco also abound. Falls and rapids on the streams in these states have in recent years led to the building of extensive cotton mills.

Great areas of the coastal plain are covered with forests of yellow pine which yield valuable lumber, rosin and turpentine. Among the important products of this section are early fruits and vegetables. The swampy coastal lowlands produce great quantities of rice.

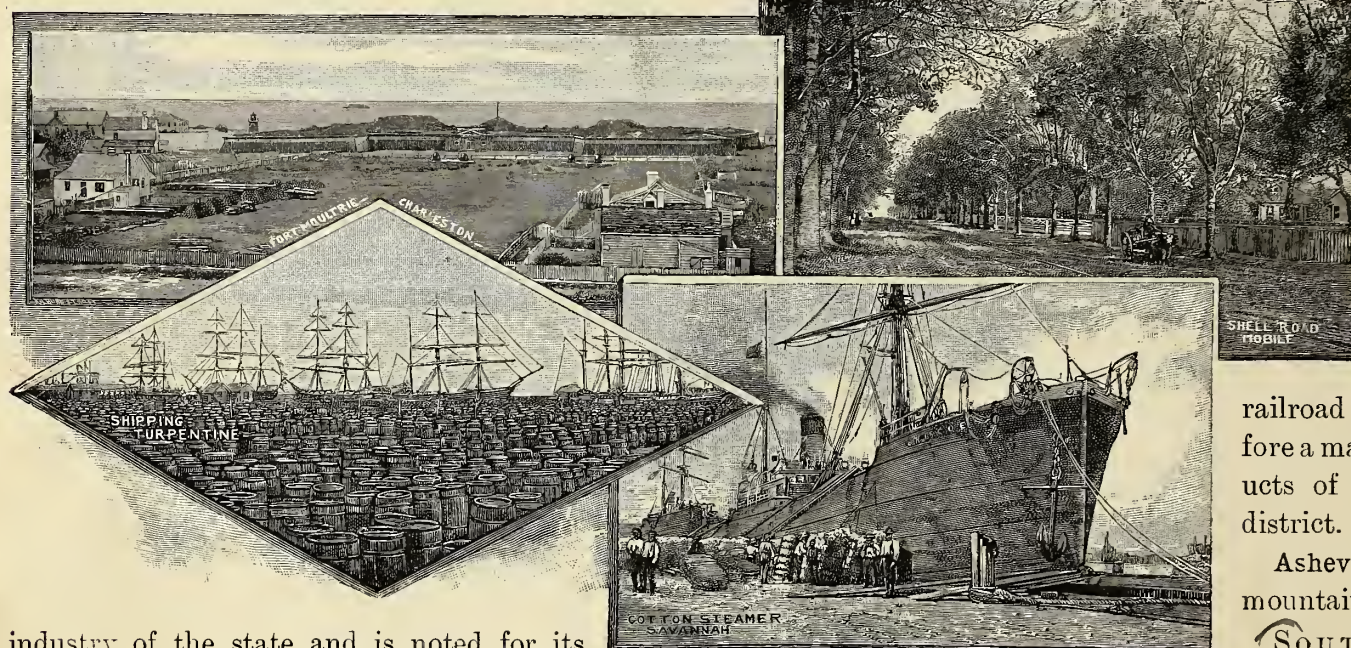
NORTH CAROLINA. **Wilmington** has a good harbor on the tidal waters of the Cape Fear river. The chief exports are cotton and tobacco from the uplands; and lumber, rosin and turpentine from the yellow-pine forests of the coastal plain. **Raleigh**, the capital, is in the

cotton and tobacco district. This city is the leading cotton market in the state, and is well known for its tobacco manufactures.

Charlotte is an important

railroad center, and therefore a market for the products of the surrounding district.

Asheville is a beautiful mountain resort.



industry of the state and is noted for its nail-works. West Virginia has extensive salt-works. **Charleston**, the capital, is in the salt region.

Parkersburg has a large trade in both crude and refined petroleum.

134. Southern States,—Eastern Section.¹

Review and Map Studies.—If a ship were to sail due west from the strait of Gibraltar, what part of our coast would it reach? Describe the climate of this section. See maps on pages 22, 128 and 129.

Which of the states of this group lie partly within the Atlantic coastal plain? Which border on the gulf of Mexico? What bound Tennessee on the east and west? Name two valuable products raised near the coast. See lesson 42. What are the leading products of the coastal plain and of the piedmont belt farther inland? See lessons 41 and 42.

What have you learned about the Carolina highland? See lesson 33. Why is the northern half of the Allegheny plateau more thickly settled than the southern half? See lesson 35.

The region at the southern end of the Appalachian highland has rich mines of iron ore and of coal. The

Charleston is the chief seaport of South Carolina. It has a fine harbor easily reached from all parts of the state. Charleston takes high rank in the export of cotton and rice.

Near Charleston, and in the river bottoms and marshy lands farther south, is found a kind of a rock known as *phosphate rock*. Large quantities of it are prepared for use as a fertilizer.

Columbia, the capital, is the railroad center of the state.

GEORGIA. In **Atlanta**, the capital, several railroads from the Atlantic coastal plain meet others from the Mississippi valley. This city is therefore a trade center for nearly all kinds of southern products. Atlanta has extensive cotton mills.

Savannah and **Charleston** resemble each other in their exports. Only New Orleans and New York, among the seaports of our country, surpass Savannah in the export of cotton. This city has a large trade in rice, and leads the world in the export of rosin and turpentine.

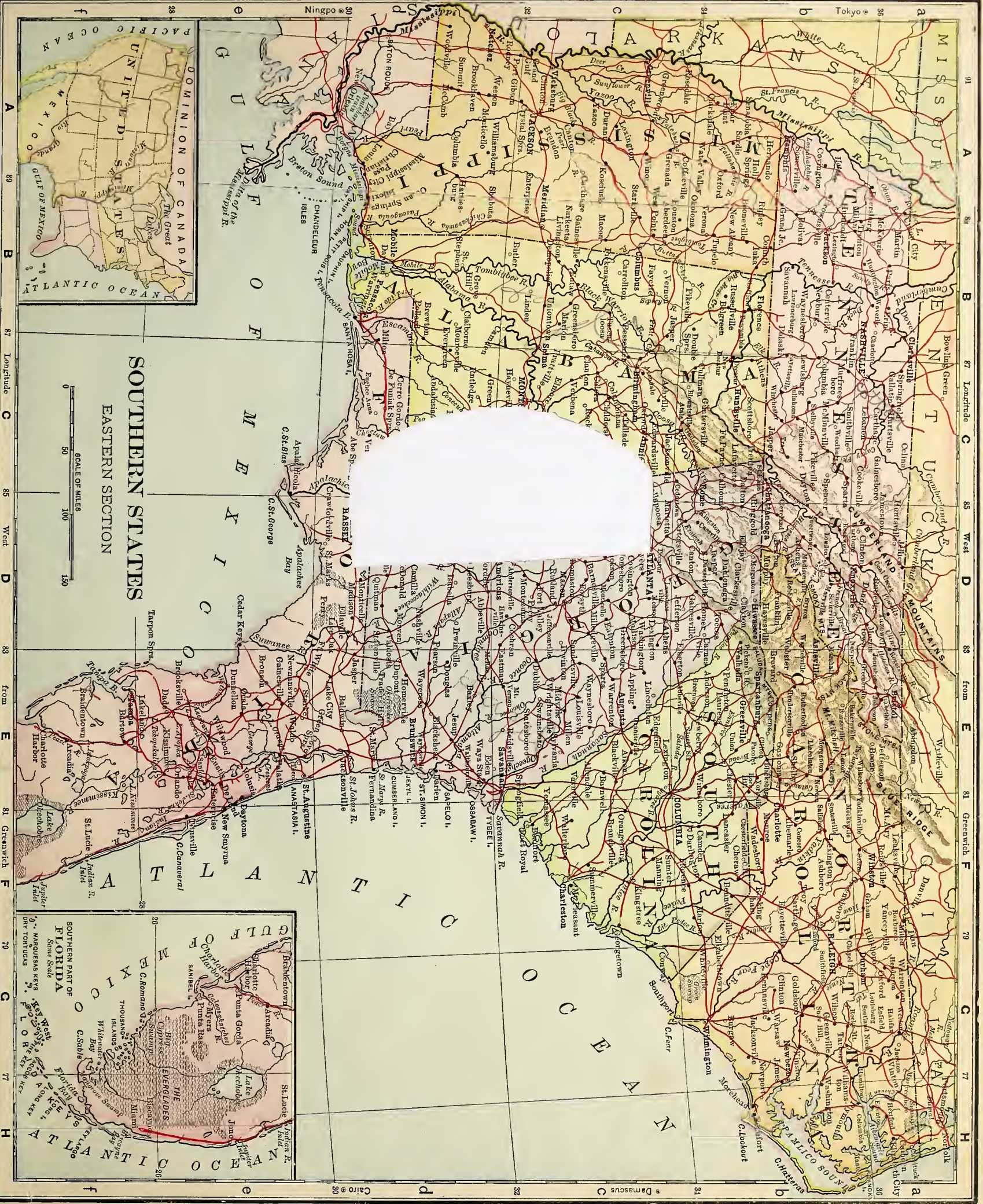
Augusta, **Macon** and **Columbus** are not only important markets for southern products, but they also have large cotton mills.

¹ See footnote on page 141.



SOUTHERN STATES
EASTERN SECTION

SCALE OF MILES
0 50 100 150



SOUTHERN STATES
EASTERN SECTION

SCALE OF MILES
0 50 100 150

FLORIDA. **Key West**, the largest city in Florida, is on a coral island. The chief manufacture in this city is cigars made of Cuban tobacco. Sponges are shipped from this port. It is a United States naval station.

Tallahassee is the capital of Florida.

Jacksonville has a large trade in lumber and oranges.

Pensacola exports great quantities of lumber. A United States navy yard is located near this port.

ALABAMA. **Mobile**, at the head of Mobile bay, is the principal port, and forms the outlet for a large portion of the cotton and the lumber products of the state.

Birmingham is situated in the coal and iron district near the southern end of the Appalachian highland. This city has extensive manufactures of iron and steel.

Montgomery, the capital, has a large trade in cotton.

MISSISSIPPI.

Vicksburg and **Natchez** are important cotton markets on the Mississippi river. **Meridian** ships much of the cotton of the eastern part of the state. **Jackson** is the capital.

TENNESSEE. **Nashville**, the capital, is in a region where both cotton and tobacco are produced. Large areas in Tennessee are forested. Nashville is a market for cotton, lumber and tobacco. **Memphis** is the largest cotton market in the state, and the most important river port between St. Louis and New Orleans. Memphis is also a railroad center. Much of the cotton sent from this city goes by rail to New York or to other cities in the northeast part of our country, where there are many cotton mills.

Chattanooga, like Birmingham, is in the coal and iron district near the southern end of the Appalachian highland. Iron and steel goods are the chief manufactures in both these cities.

Knoxville is the trade center of northeastern Tennessee.

135. Southern States,—Western Section.¹

Review and Map Studies.—What two territories are in this group? Which is the larger,—Texas or New England? Which reaches farther south,—Texas or Florida? See map on page 126.

Which states of this group lie along the Mississippi river?—Along the coast of the gulf of Mexico?

Describe the climate of this group of states and territories. See maps on pages 22, 128 and 129.

¹ See footnote on page 141.

Describe the delta of the Mississippi. What have you learned about the flood plains of this river? See lesson 41.

What have you read about the Texas prairies? See lesson 39. What region is on the west of these prairies? How do you account for its dryness? See lesson 38.

Which part of this section is the most thickly settled? Why? See map on page 124.

The products and industries of this section resemble those of the states farther east. Rice thrives in the swamps along the coast and in the river valleys; sugar cane abounds in the flood and delta plains; forests of yellow pine and other trees cover large areas; cotton, grain and tobacco grow in abundance; large numbers of cattle and sheep graze in the western portion of the section, especially in Texas. Among the states of our country, Texas takes first rank for cotton and cattle. Louisiana produces more sugar cane and rice than any other state.

LOUISIANA. **New Orleans** has an excellent harbor on the Mississippi river and has grown to be the largest city in the Southern states. Though its import trade in foreign goods is not large, yet its foreign export trade surpasses that of every other city in the Union, except New York. New Orleans sends yearly to Europe cotton valued at nearly one hundred million dollars. This city has also a very large trade in sugar, rice and corn.

New Orleans has had rapid growth in manufactures. It takes high rank in the refining of sugar.

Shreveport, on the Red river, is in a rich cotton district. This city is the second cotton market in the state, and has a large river traffic. Steamboat and railroad lines connect it with New Orleans. **Baton Rouge** is the capital.

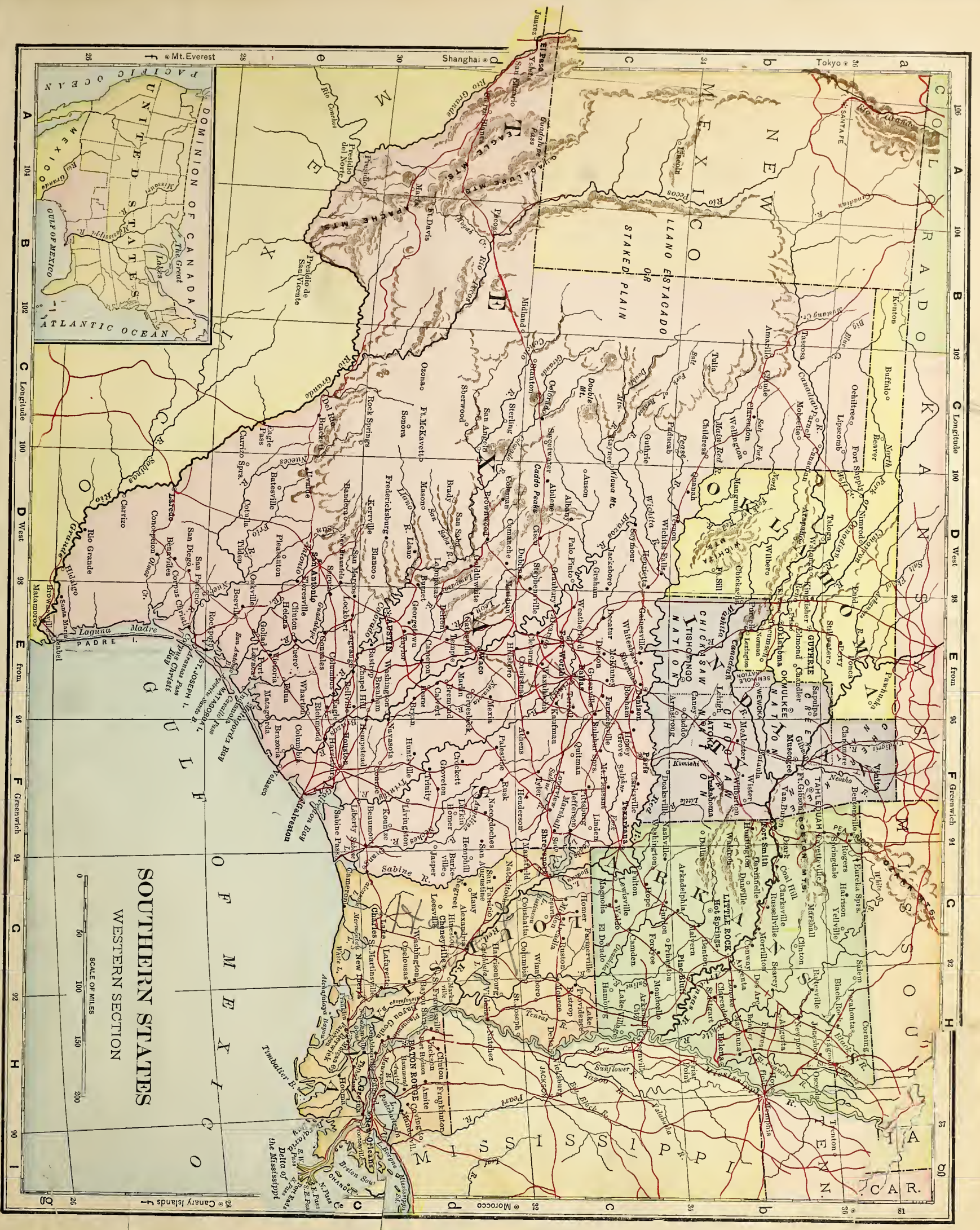
Dallas and **Fort Worth** are centers of trade in the northeastern part of the Texas prairies,—in a rich farming and grazing district. Grain and cattle are shipped from this district.



Texas Grazing Scenes.



Cotton Picking.



SOUTHERN STATES
WESTERN SECTION

SCALE OF MILES
0 50 100 150 200

San Antonio is an important railroad center and has a large trade in southwest Texas.

Galveston ranks high among the cotton ports of our country. Among its other exports are hides and wool.

Houston is an important railroad center, and is situated on the navigable *Buffalo Bayou*. **Austin** is the capital.

ARKANSAS. **Little Rock** is the capital and largest city in Arkansas. Large quantities of cotton-seed oil and oil-cake are made in this city.

Fort Smith is a trade center in the western part of the state. **Hot Springs** is a well-known resort for invalids.

OKLAHOMA. This territory was opened to white settlers in 1889, and is now only thinly settled. Corn and cotton are raised in some parts, while others are suitable only for grazing. **Oklahoma** and **Guthrie** are the principal towns.

INDIAN TERRITORY. This territory was set apart as a

The Central states form the best farming and grazing district in our country, so that meat-packing and flour-milling are very important industries. The iron mines in the lake Superior region are without a rival. The copper mines in the same district are only slightly surpassed by those of Montana.

The pine forests around the upper lakes, and the hard-wood forests a little farther south, give this section first rank in lumber, as well as in the manufacture of farming machines, furniture and carriages. Beds of soft coal, and wells of natural gas, supply fuel for the extensive manufactures. The eastern and southern portions of this section hold first place in the production of wool, tobacco and hemp.

Though these states have no seacoast, and therefore little foreign commerce, yet they have fine water ways for inland commerce on



Long-Leaf Pine.



Hickory Forest.

home for certain tribes of Indians. They have built towns and carry on trade as the white men do. There are schools in the large towns. **Ardmore** is the leading town. **Tahlequah** is the capital of the Cherokee nation.

136. Central States, — Eastern Section.¹

Review and Map Studies. — Which is farthest north, — Chicago, Boston or Rome (Italy)?

Which of the states in this section border on lake Michigan? Which state has the longest lake coast? Between what states does the Ohio river flow? — The Mississippi river?

Study the maps on pages 22, 128 and 129, and then tell what you can about the climate of this group of states.

Which part of this section is mountainous? Which of the states in this group are partly within the Allegheny plateau region? Name some of the products. See lessons 35, 124, 125, 128 and 130.

Which of the states of this group lie partly within the St. Lawrence basin? Name some of the products of the region round lake Michigan. See lesson 37. Which part of this group of states is in the soft-wood forest belt? See lesson 122. Which parts are the hard-wood forests?

Describe the principal products of the prairies? maps on page 128.

¹ See footnote on page 141.

the Great Lakes and the Mississippi system. Moreover, most of the section is so level or so gently rolling that railroads are built at small expense, and freight rates by rail are therefore low.

Such are the natural advantages and fruitful industries of the Central states to-day, although many people are still living who can recall the time when most of the region was a wilderness, and when even Chicago was only a frontier trading town on the small river which now flows through the second largest city in all America.

OHIO. **Cincinnati** has about ten miles of water front on the Ohio river, and fully a score of railroad lines enter this city. It has therefore grown to be a center of trade for a great area of farming and grazing country. The chief manufactures of Cincinnati are clothing and liquors. Large numbers of cattle and hogs are raised in the Ohio valley, and many of these are sold in Cincinnati. Meat-packing is therefore an important industry. Many kinds of iron goods also are made here.

Cleveland is within easy reach of the coal fields of Ohio and Pennsylvania; of the oil districts in the same states; of the iron mines of the lake Superior region; of the soft-wood district of Michigan, and the hard-wood forests of Ohio.

newin from 119 to 140



With these advantages, Cleveland has become a leading city in iron and steel manufactures, in oil refining, in ship-building, and in other great industries. More petroleum is refined in Cleveland than in any other city of the Union.

Columbus, the capital, is a trade center for middle Ohio. This city is noted for the manufacture of fine carriages.

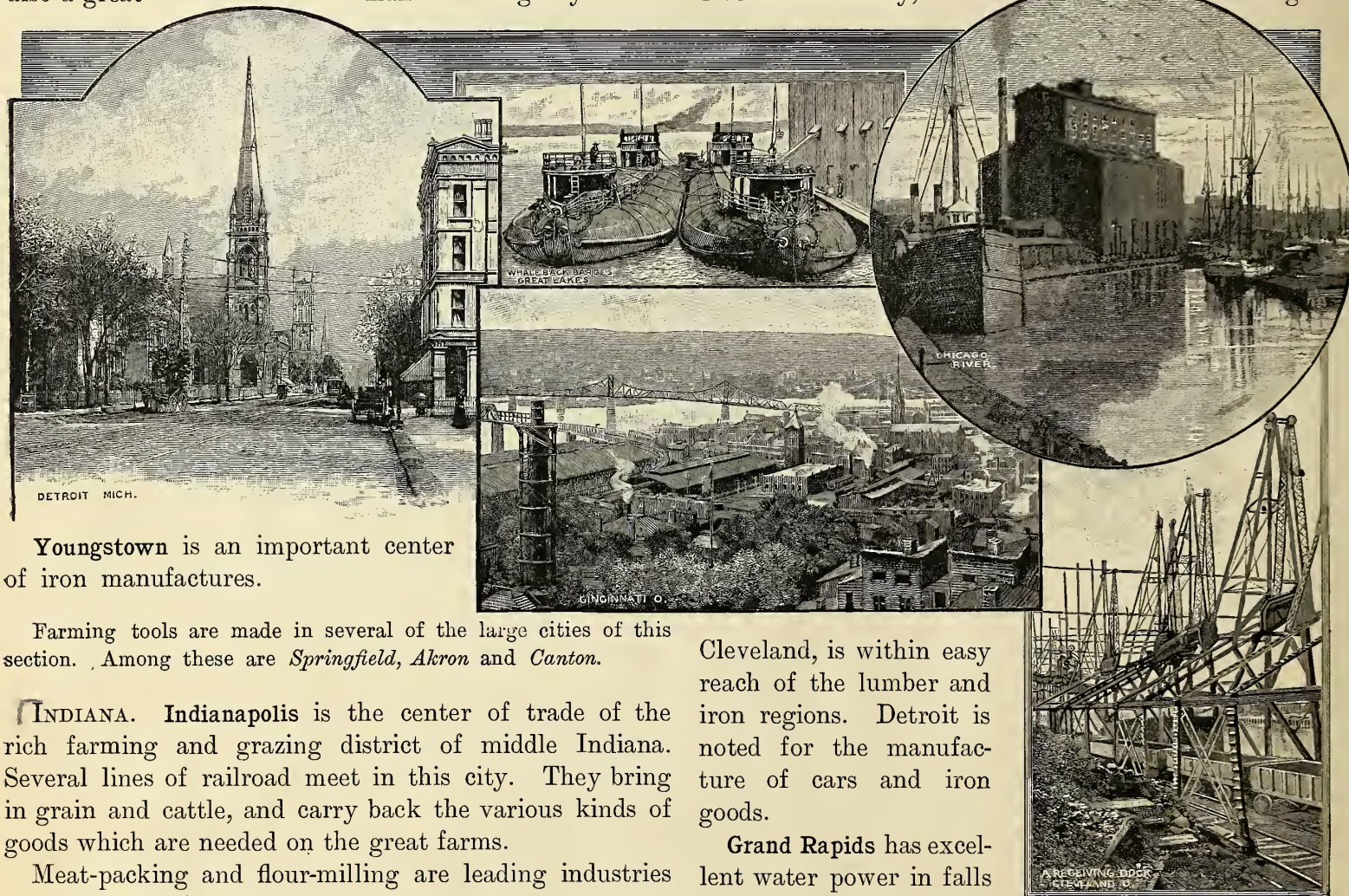
Toledo has docks several miles in length, and is a shipping point for grain, flour, iron ore, lumber and coal.

Dayton is the center of a fine farming region and is also a great manufacturing city.

Chicago is the greatest railroad center and lake port in the world. This city ranks first also as a meat, grain and lumber market. No other city in the Union makes as much furniture or as many farming implements. In the manufacture of iron, only Pittsburg surpasses Chicago.

The leading industry in Peoria is the manufacture of liquors. Springfield, the state capital, is a trade center for middle Illinois; and Quincy, for the western part of the state.

MICHIGAN. Detroit has a fine harbor on the Detroit river. This city, like Chicago and



Youngstown is an important center of iron manufactures.

Farming tools are made in several of the large cities of this section. Among these are *Springfield*, *Akron* and *Canton*.

INDIANA. Indianapolis is the center of trade of the rich farming and grazing district of middle Indiana. Several lines of railroad meet in this city. They bring in grain and cattle, and carry back the various kinds of goods which are needed on the great farms.

Meat-packing and flour-milling are leading industries in the state capital.

Evansville is the principal shipping point for the grain, flour and meat products of southwest Indiana.

Fort Wayne is an important trade center in the northeast part of the state. Many railroad cars are made in this city.

South Bend is famous for its wagons and plows.

New Albany is an important port on the Ohio river.

ILLINOIS. In the value of its manufactures, Chicago ranks second among American cities. The various articles made or prepared for market in a single year in this great city are worth nearly as much as all the goods imported into our country during the same length of time.

From what regions does Chicago receive wheat, corn, cattle, hogs, iron ore, coal, lumber? What canal route leads through Chicago?

Cleveland, is within easy reach of the lumber and iron regions. Detroit is noted for the manufacture of cars and iron goods.

Grand Rapids has excellent water power in falls of the Grand river, and is also near the lumber districts. No other city in the lake region, except Chicago, manufactures as much furniture. Lansing is the state capital.

Saginaw, Bay City and Muskegon have an immense trade in lumber. The most productive salt-works in our country are in the district near the head of Saginaw bay.

WISCONSIN. Milwaukee is the second city in size on lake Michigan. This port has an excellent harbor, and carries on an extensive lake commerce similar to that of Chicago, though much less in value. The chief manufactures of Milwaukee are liquors and flour.

La Crosse, Oshkosh and Eau Claire are lumber markets. Racine manufactures wagons and farming implements. Madison is the capital.

KENTUCKY. This state takes the lead in the cultivation of tobacco and hemp. **Louisville** is one of the largest tobacco markets in the world. Great quantities of leather are tanned here. **Frankfort** is the capital.

Covington and **Newport** are on the Ohio river, opposite Cincinnati. These Kentucky cities, though among the largest in the state, are really suburbs of Cincinnati. They contain many fine residences.

Lexington is in the *Blue Grass region*, — a district famous for fine horses.

137. Central States,—Western Section.¹

The prairie portion of the states in this Western section is in the wheat and corn area. Almost the entire section is suited to grazing. In the northeast are portions of the lumber and the iron districts.

The principal industries of these states are farming, grazing, lumbering, flour-milling and mining.

MISSOURI. **St. Louis** has a population about equal to that of Boston. The former city is the principal trade center of the middle Mississippi valley, and is reached by railroads and rivers from nearly all parts. Many of the products of this fertile valley find a market in St. Louis; and this city sends out groceries, clothing and agricultural implements. No American city, except Minneapolis, surpasses St. Louis in the production of flour. This great river port is near the Kentucky tobacco district and ranks next to New York in the manufacture of tobacco goods. Meat-packing is an important industry in St. Louis.

Kansas City is one of the leading railroad centers in the Mississippi basin. This city therefore has an extensive trade with the surrounding agricultural districts. It is one of the greatest markets for farming implements in the country. **Jefferson City** is the state capital.

St. Joseph and **Springfield** are important trade centers.

IOWA. **Des Moines**, the capital, is in the heart of the rich Iowa prairie region. This city is a market for grain, cattle and dairy products, for which the state is famous.

Sioux City is a large grain and meat market.

Dubuque, **Davenport** and **Burlington** are important river ports and lumber markets. These cities have a large trade in the agricultural products of the state.

MINNESOTA. The flour made yearly in **Minneapolis** could not be purchased by all the gold mined in our country during the same length of time. No other city in the Union produces one half so much flour. More than one fourth of Minnesota is covered with forests of white pine. The Mississippi river above Minneapolis is fed by many streams from the forest area, and this city has therefore become the leading lumber market in the Northwest.

St. Paul is a great railroad center, and is at the head of steamboat navigation on the Mississippi. The principal industry of the state capital consists in gathering the products of the surrounding region, and in shipping supplies to the farming and the lumbering districts.

Duluth is an eastern terminus of the Northern Pacific railroad, and is at the southwestern end of lake Superior. This city is the outlet of the wheat district in the Red river prairies. **Winona** is a



Steamer Routes on the Great Lakes.

lumber market on the Mississippi river.

NORTH DAKOTA. This state lies north of the corn belt, but its wheat district in the Red river valley has

no superior. A large part of this state affords excellent grazing land for cattle and sheep. **Fargo** and **Bismarck**, the capital, are the most important trade centers.

SOUTH DAKOTA. The prairies in the northeast part of this state form a portion of the famous wheat region which extends also into North Dakota. The southeast part of South Dakota is in the corn belt.

Sioux Falls and **Pierre** are points of supply. **Pierre** is the state capital.

The Black hills, with their valuable gold mines, lie mostly within the western part of South Dakota.

NEBRASKA. The best farming land of Nebraska, as of the two Dakotas, is in the eastern half of the state. Corn is the most valuable product. The other half of the state forms part of the Western plains where cattle-raising is the chief occupation.

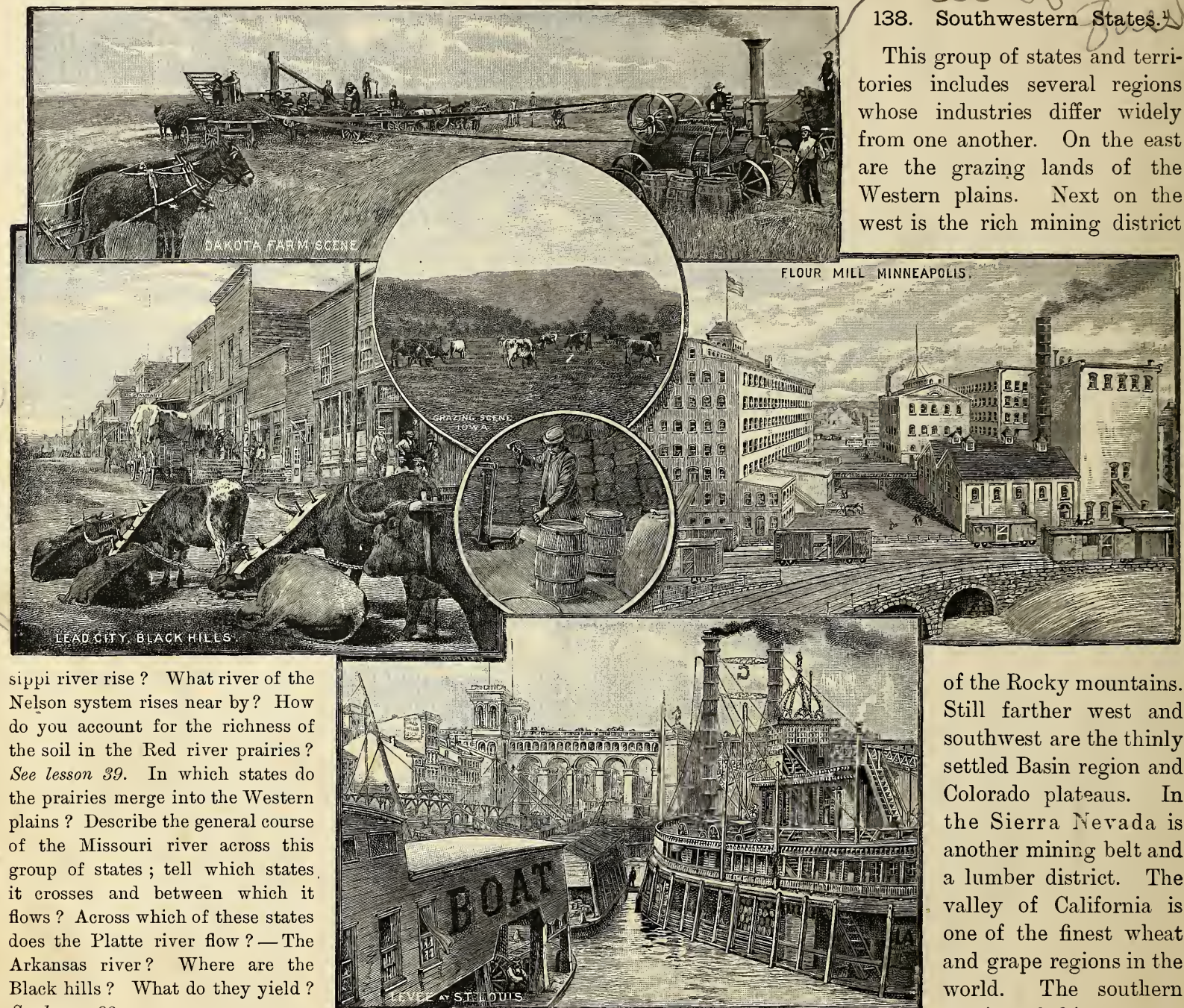
Omaha is a large railroad center and a shipping point for cattle and grain.

¹ See footnote on page 141.

Review and Map Studies. — Locate this group of states. What two large cities in this section are about halfway between the equator and the north pole? Which extends farther north, — Maine or Minnesota? Which states in this group are west of Illinois?

What do the maps on pages 22, 128 and 129 show about the climate of this group of Central states? Where does the Missis-

issippi river rise? What river of the Nelson system rises near by? How do you account for the richness of the soil in the Red river prairies? See lesson 39. In which states do the prairies merge into the Western plains? Describe the general course of the Missouri river across this group of states; tell which states it crosses and between which it flows? Across which of these states does the Platte river flow? — The Arkansas river? Where are the Black hills? What do they yield? See lesson 38.



138. Southwestern States.

This group of states and territories includes several regions whose industries differ widely from one another. On the east are the grazing lands of the Western plains. Next on the west is the rich mining district

of the Rocky mountains. Still farther west and southwest are the thinly settled Basin region and Colorado plateaus. In the Sierra Nevada is another mining belt and a lumber district. The valley of California is one of the finest wheat and grape regions in the world. The southern portion of this state ex-

cel in high grades of oranges. The Coast range yields excellent lumber. California contains more than half the people in this group of states and territories. The entire group has a population only about two thirds as large as that of New York city.

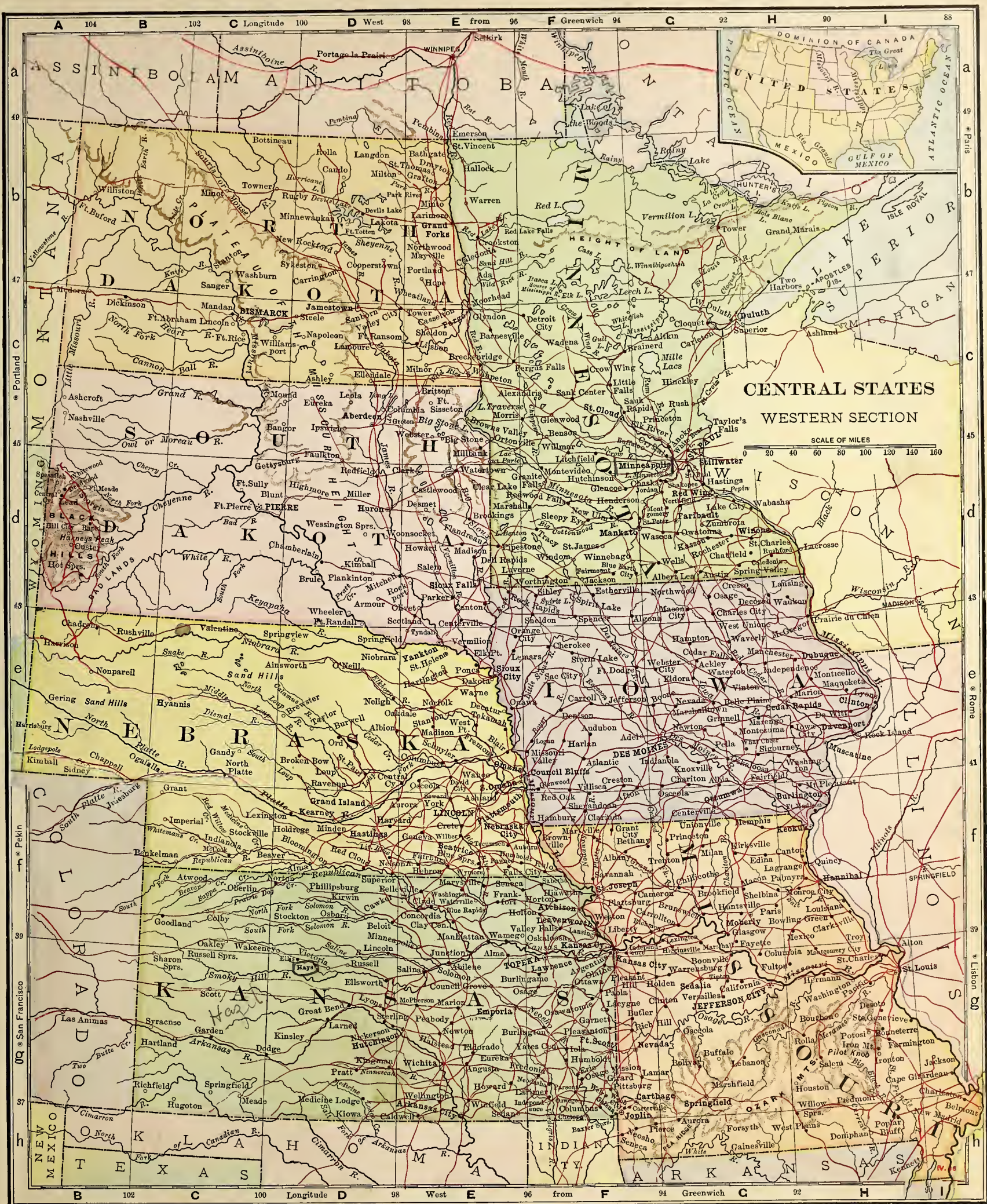
COLORADO. Denver is a supply city for mining districts in the Rocky mountains, and for cattle ranches on the Western plains. It is located near the foothills of the giant range of the Rockies. Few cities in our country have had a more rapid growth than this state capital.

Lincoln, the capital, is reached by several railroads and has grown to be the most important trade center in the corn and wheat region of southeastern Nebraska.

KANSAS. This state, like Nebraska and the Dakotas, is part prairie and part plains. The chief products are corn, wheat and cattle. The grains grow best in eastern Kansas.

Kansas City is the greatest meat market west of the Mississippi river. Chicago and New York are the only American cities which surpass Kansas City in the value of their meat-packing industries. Each year thousands

¹ See footnote on page 141.



Review and Map Studies. — Locate this group of states and territories. Which are territories? *See lesson 113.*

What portion of the Atlantic coast of our country is due east of California? Which is farther north, — San Francisco or St. Louis?

If a ship were to sail due west from San Francisco, what large Asiatic island would it reach? Which states and territories border on Mexico? In which state is the main part of the Sierra Nevada? Where is the grand canyon of the Colorado? — Great Salt lake? — Great Basin? — Mohave desert? What do the maps on pages 22, 128 and 129 show about the climate of this group of states? In what respects does the valley of California resemble the plain of Chile? *See lessons 28 and 45.* What are the principal products of the South-western states? *See lessons 118, 122, 124 and 131.*

Pueblo and Leadville have large smelting works. The latter city is in the heart of the Rocky mountains, nearly two miles above sea level. It is one of the greatest silver-mining cities in the world, and has rich gold mines. **Colorado Springs** is a well-known resort for invalids.

NEW MEXICO. This territory is mostly in the basin of the Rio Grande. **Santa Fe** is the capital.

The raising of cattle and sheep is the principal industry. Silver ore is mined in this territory. **Santa Fe** and **Albuquerque** are the chief trade centers. The former is the second oldest town in our country.

UTAH. Utah now ranks third in the production of silver, — Colorado being first, and Montana second. Some portions of Utah, especially along the small river valleys, are irrigated. They yield grain and vegetables.

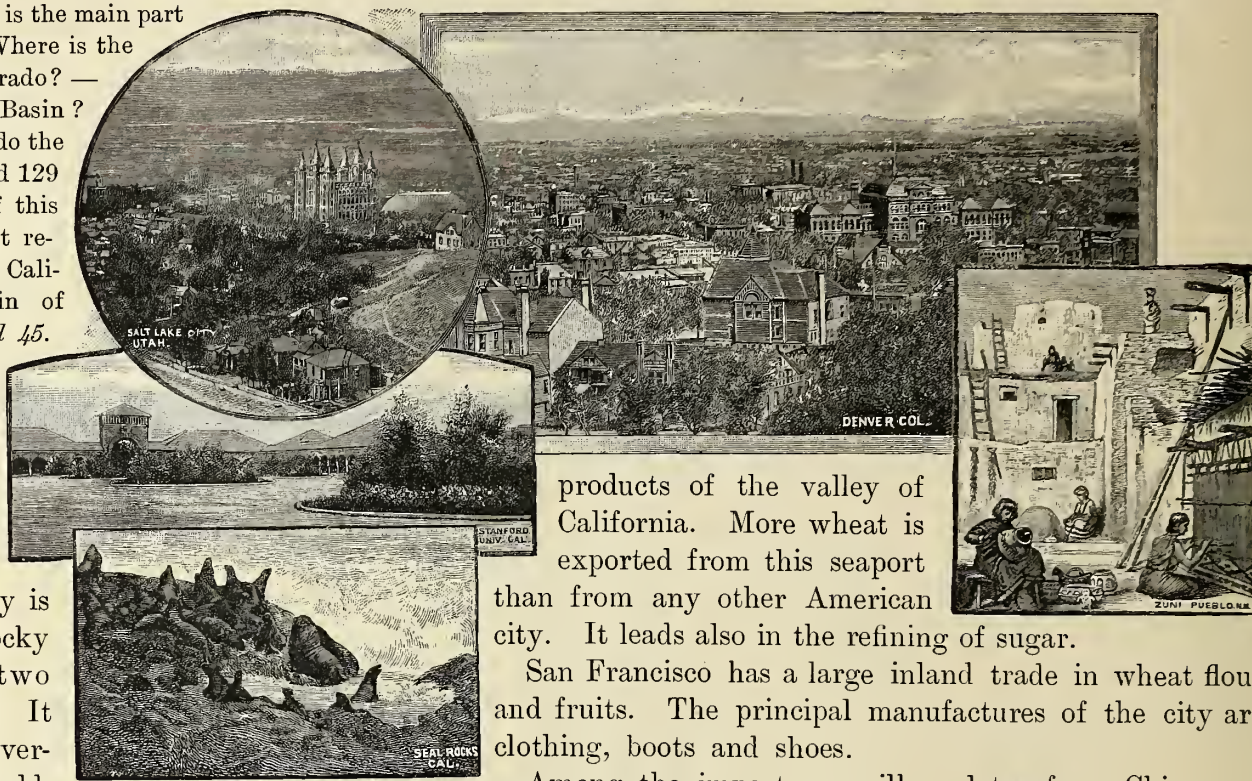
Salt Lake City and **Ogden** are important railroad centers and points of supply. The former is the capital.

ARIZONA. Silver and copper are the principal products of the mines in this territory. Arizona ranks high in the output of copper. There are good irrigated farms in the basin of the Gila river, west of the Colorado plateau region. **Phenix** is the capital. **Tucson** and **Phenix** have a large trade in outfits for miners.

NEVADA. Silver and gold mining rank first among this state's industries. The river valleys are suited to farming and grazing. **Carson City** is the capital.

Virginia and **Carson City** are well-known mining centers.

CALIFORNIA. **San Francisco** is the natural outlet for the



products of the valley of California. More wheat is exported from this seaport than from any other American city. It leads also in the refining of sugar.

San Francisco has a large inland trade in wheat flour and fruits. The principal manufactures of the city are clothing, boots and shoes.

Among the imports are silk and tea from China and Japan, and sugar from Honolulu. There is a large navy yard on an arm of San Francisco bay, a few miles northward from the Golden Gate.

Los Angeles is the largest trade center in southern California. This city is an active fruit market.

Oakland is on the east shore of San Francisco bay. Ferries cross the bay between these cities.

Oakland is largely a city of residences. It is the home of many persons whose business is in San Francisco.

Sacramento, the capital, has a large trade in wheat.



Products from Irrigated Lands in Colorado.

139. Northwestern States.

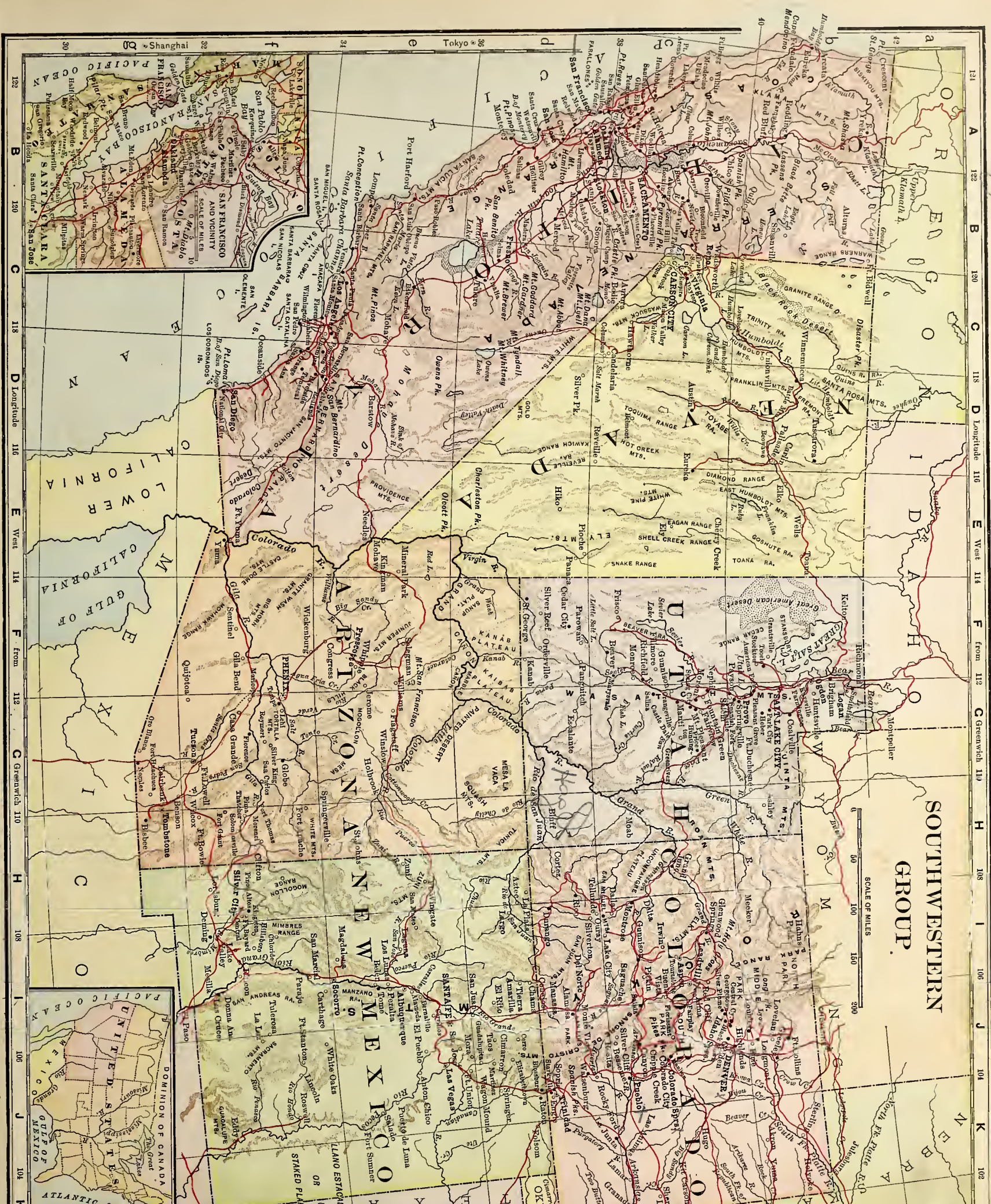
The industries in this group of states are similar to those in the group on the south. There are the grazing districts of the Western plains, the mining regions of the Rocky mountains, the barren lava plains, the wheat lands in the Willamette valley, the forested slopes of the Cascade and Coast ranges.

These five states together have a population less than that of either New York or Chicago.

MONTANA. The chief occupations in this state are

(Continued on page 158.)

Geological and Outcrop to geation.



SOUTHWESTERN GROUP.

SCALE OF MILES
0 50 100 150 200

Review and Map Studies. — Which is farther north, — Portland (Oregon) or Montreal?

Name all the states that border on Canada; on the Pacific.

Refer to the maps on pages 22, 128 and 129, and describe the climate of the Pacific coast of this group.

In what direction do the Rocky mountains extend across this group of states?

Name the states

crossed by these

mountains.

Locate the

Yellow-

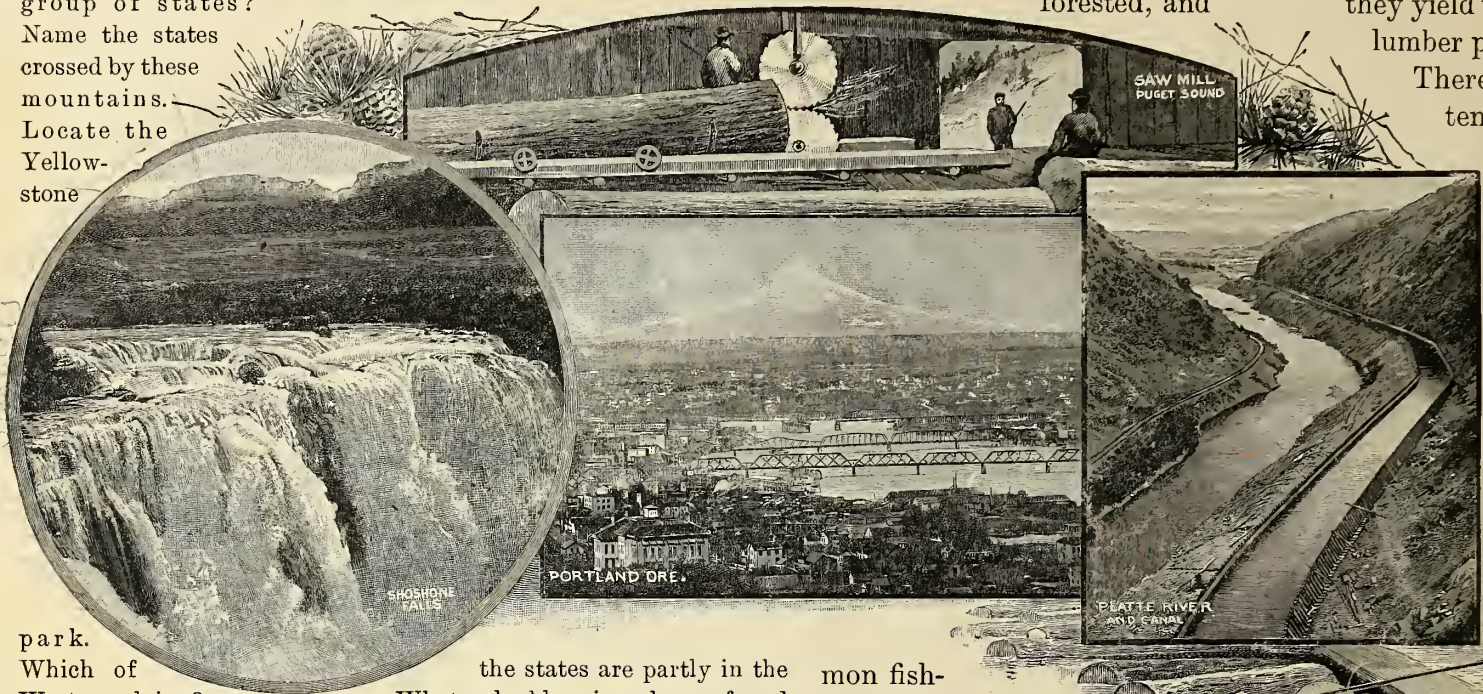
stone

Boise is the capital and the trade center of Idaho.

OREGON. The portion of this state east of the Cascade range has large cattle ranches. The Willamette valley is an excellent wheat district. Many sheep are also raised here. The Cascade and Coast ranges are heavily forested, and they yield valuable

lumber products.

There are extensive sal-



park.

Which of Western plains?

In Montana? See lesson 131. Describe the Cascade range; the Coast range. See lessons 24 and 28.

the states are partly in the

What valuable minerals are found

mon fish-eries in the Columbia

river. Portland, on the Willamette

branch of the Columbia river, is the commercial center of the state. Salem, the capital, is in the wheat and the wool district of the Willamette valley.

(Lesson 139, cont.)

mining and cattle-raising. Montana is famous for its rich copper mines. Colorado alone surpasses it in the production of silver. The gold mines of Montana are very productive. Both Helena and Butte have a large trade in mining outfits. There are also extensive smelting works in these cities. Helena is the state capital.

WYOMING. This state has few mines, but it has immense cattle ranches. Cheyenne and Laramie are the principal trade centers. The former city is the capital and one of the largest cattle markets in America, because it is the only shipping point for a large grazing area.

The greater portion of Yellowstone park is in north-west Wyoming.

IDAHO. Mining is the chief industry of Idaho, — with silver, gold and lead as the products. The river valleys in the northern part of this state form a very productive wheat district.



Sitka, Alaska.

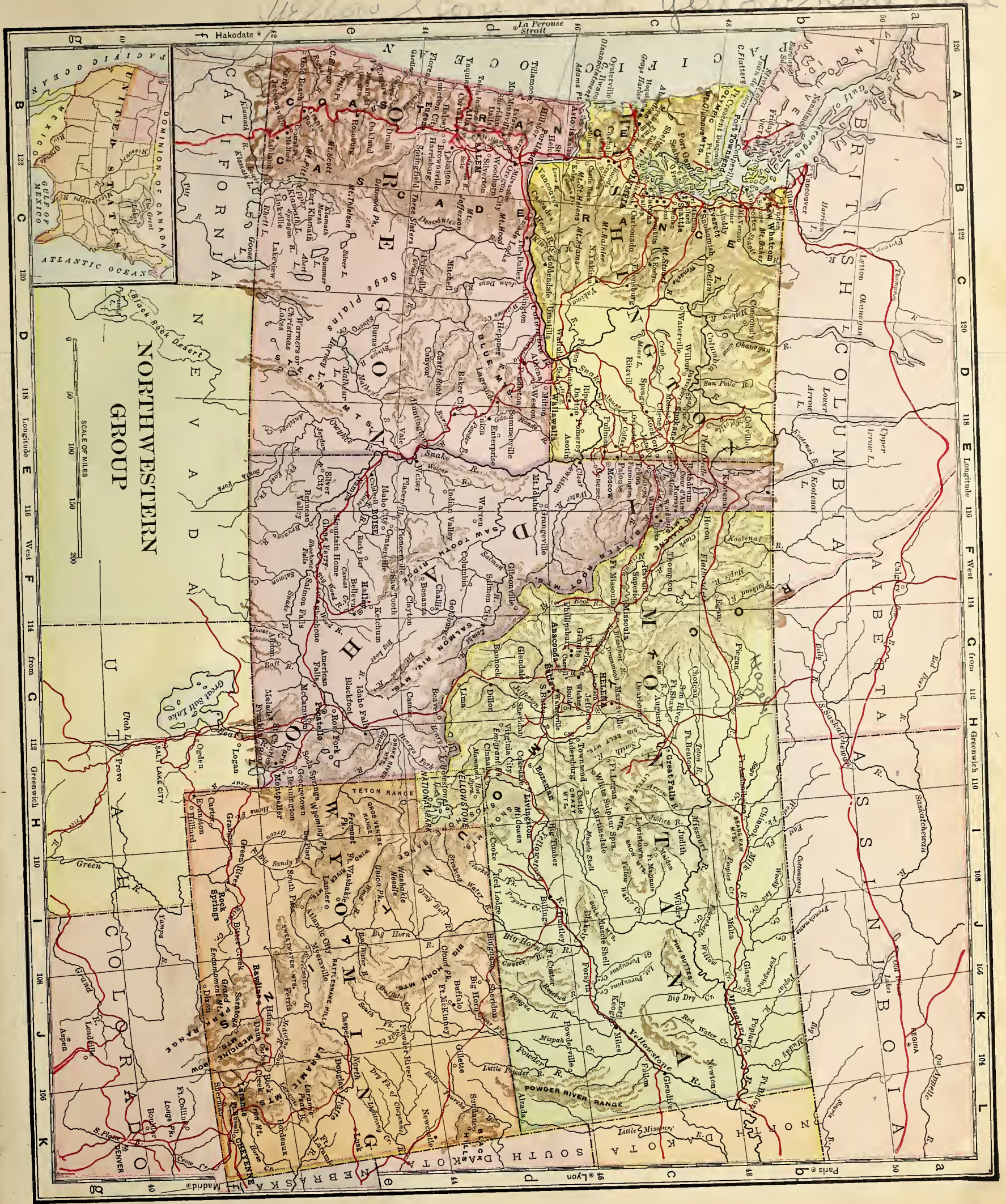
WASHINGTON. The industries of this state resemble those of Oregon. Wheat is the leading product of middle and southeast Washington. The country around Puget sound is one of the best lumber districts in the world. Coal also is found here. Washington shares with Oregon the salmon fisheries of the Columbia river.

Seattle and Tacoma are important cities on Puget sound. They have excellent harbors and are the trade centers of the state. Both are large lumber markets.

Spokane, the center of trade in eastern Washington.

has fine water power. Olympia is the capital.

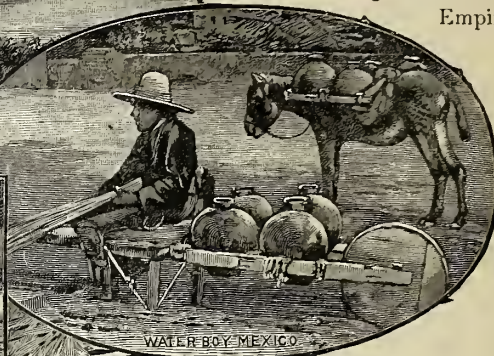
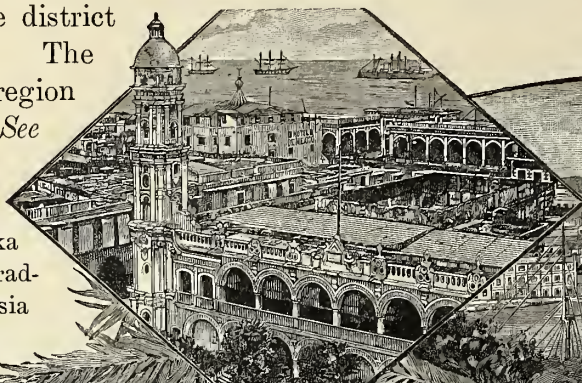
ALASKA. Many of the people in this territory are Indians. The others are white settlers and Eskimos.



The shore waters and the rivers of Alaska abound in salmon. The canning of this kind of fish is a very important industry. Fur seals in large numbers are taken on the Pribilof islands.

Sitka is the capital of the territory. Considerable gold is mined in the district around Juneau. The Klondike gold region is in Canada. See map below.

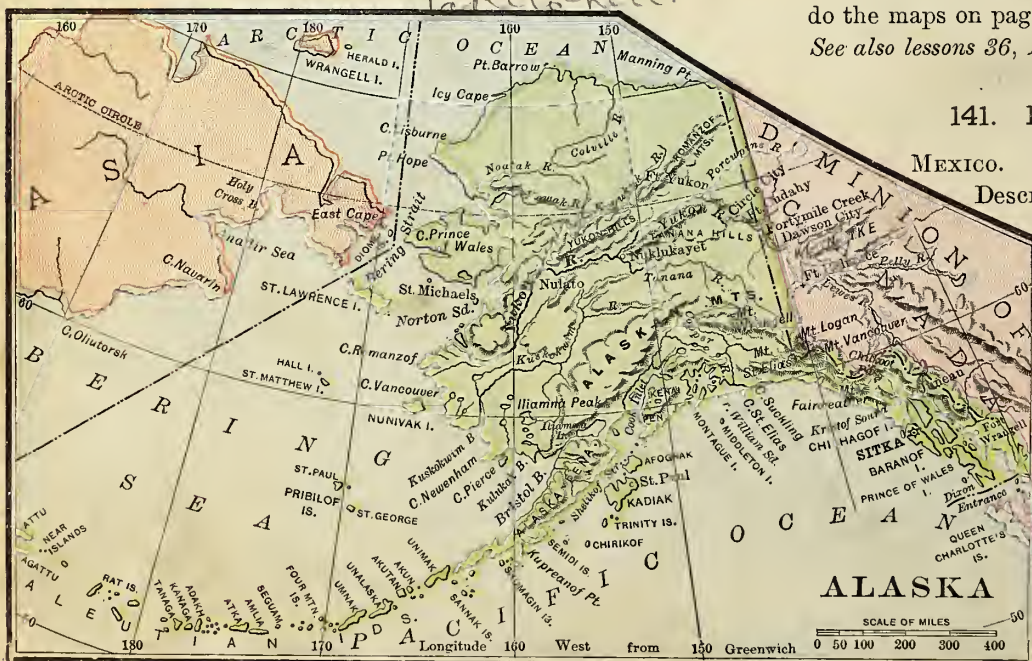
The first white settlers in Alaska were Russian fur traders. In 1867 Russia sold Alaska to



the United States for \$7,200,000. This is a small sum compared with the value of the furs, the fish, the gold and the lumber which this northern region yields.

Alaska is about one sixth as large as the rest of our country, but only a small portion of this territory is suitable for the homes of white people. The gold fields in the Yukon basin have led thousands of men to seek fortunes in the desolate regions of the far north.

The best part of Alaska is the southwest coastal region. Rainfall is plentiful in this northern land, but the warm season is too short to ripen grain.



CANADA, MEXICO, ETC.

140. Review and Map Studies.

NOTE:—The Dominion of Canada consists of various provinces and districts. Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba and British Columbia are provinces; other divisions, formed of parts of the thinly settled regions once known as the territories, are called districts. The province of Newfoundland, including the district of Labrador, is not a part of Canada; but both Newfoundland and Canada belong to the British Empire.

What large bodies of water partly surround the province of Ontario? What river separates Ontario from New York? Through what province does the St. Lawrence river flow? Locate Nova Scotia; — New Brunswick: — Prince Edward island. What large island forms the northern part of the province of Nova Scotia? Between what provinces is the bay of Fundy? Which province of Canada includes a portion of the Red river basin? What large lake lies partly within this province? Name three districts drained chiefly by the Saskatchewan river. What district and province meet in the Rocky mountains? Which province is almost wholly within the Rocky mountain highland? Name a large island belonging to this province.

Name three large lakes that form part of the Mackenzie system. In what district is the lower part of the Mackenzie basin? What do the maps on pages 21 and 22 show about the climate of Canada? See also lessons 36, 40 and 115.

141. Review and Map Studies.¹

MEXICO. What bodies of water partly surround Mexico? Describe the highland of Mexico. See lesson 30. What have you learned about the coastal region of this country? Where is the isthmus of Tehuantepec?

Refer to the maps on pages 21 and 22, and tell what you can about the climate of Mexico. See also lesson 30. Tell what you know about the people of Mexico, and their form of government. See lessons 86 and 91.

CENTRAL AMERICA. Between what bodies of water do the states of Central America lie? What nation controls Belize? See lesson 91. Which of the Central American

These map studies should follow lesson 142 but precede lesson 143.



states adjoin Mexico? Which is the smallest state in this group? Between which states is lake Nicaragua? What have you learned about this lake? *See lesson 31.* Where is the Mosquito coast? Of what country is the isthmus of Panama a part? Describe the surface and the climate of Central America. Locate the following cities and towns: New Guatemala, Managua, Bluefields, San José.

*WEST INDIES. Locate Cuba, Haiti, Jamaica, Puerto (or Porto) Rico, the Leeward islands, the Windward islands.

What do the maps on pages 21 and 22 show about the climate of the West Indies? Where are the following cities: Havana? Port au Prince? Santo Domingo? Kingston? Nassau?

142. Canada and Newfoundland.

Canada is about equal in area to the United States, but the population of the former is less than one twelfth that of the latter.² The provinces of Canada, — in their surface, their products and their climate, — resemble the portions of our country which they adjoin; but the winter climate of Canada, except in British Columbia and southeast Ontario, is more severe than that of the states along our northern border.

The best portion of Canada is the region lying among lakes Huron, Erie and Ontario, and thence extending along the St. Lawrence river to Quebec. This region includes parts of both Ontario and Quebec. Barley and wheat thrive here; soft-wood forests abound; and large numbers of sheep and cattle find excellent pasturage.

In this productive area are found most of the large cities of Canada. Among these are **Montreal**, **Toronto**, **Quebec**, **Hamilton** and **Ottawa**. These cities have a large trade in lumber, barley, sheep and wool, cattle and hides. Newfoundland and the provinces of Canada on the gulf of St. Lawrence have extensive fisheries. **Halifax** and **St. John's** send large quantities of codfish to our country. Most of these are caught on the banks of Newfoundland. New Brunswick, like Maine, is in the forest belt. **St. John** exports lumber, largely to the United States. The province of Manitoba includes parts of the Red river prairie region. **Winnipeg** therefore exports wheat. British Columbia, like the state of Washington, has valuable coal mines, forests and fisheries. This province and the Klondike region farther north yield large amounts of gold. The chief city of the province is **Victoria**, on Vancouver island. **Dawson** is the leading city in the Klondike region.

143. Mexico, Central America and the West Indies.

MEXICO. About nine tenths of the people of Mexico live in the uplands, where there is good farming and grazing land. Cattle-raising is here a leading industry. Among the agricultural products are coffee, cotton, sugar cane and tobacco.

¹ See footnote on page 141.

² A large part of Canada once, but now people of French descent live greatly outnumbered.

In some parts of Mexico, especially in Yucatan, is raised a variety of century plant that yields a kind of fiber known as *Sisal hemp*. This hemp is shipped in large quantities to our country where it is used in making rope and twine.

Mexico has rich mines of silver and other minerals. The most valuable mines are in the region of the Sierra Madre. This country has few mills or factories. The chief manufacture is cotton cloth.

The leading exports from Mexico to the United States are silver, coffee and cattle. Our country sends cloth and hardware to Mexico. The trade is carried on largely across the Rio Grande, as well as through the ports of **Vera Cruz** on the east, and **Acapulco** on the south.

Mexico, the capital and principal city of the republic, has a population somewhat larger than San Francisco. The city of Mexico is high up on the plateau.

*CENTRAL AMERICA. Central America contains several small states, — Guatemala, Honduras, Salvador, Nicaragua and Costa Rica. A large part of the foreign trade of Central America is with the United States. These small tropical countries send us coffee, bananas, rubber and indigo. Our country exports cloth and hardware to the Central American republics.

*WEST INDIES. The name *West Indies* is given to the groups of islands which partly inclose the gulf of Mexico and the Caribbean sea. The products of these islands are similar to those of Mexico and Central America, but the most valuable are sugar, tobacco and coffee. Jamaica and the Bahama islands belong to Great Britain. The island of Haiti comprises the two small republics of Haiti and Santo Domingo. Puerto (or Porto) Rico belongs to the United States. Cuba is at present under the protection of our country. *See Supplement on Island Possessions of the United States.*

There are about as many people in Cuba as in the city of Chicago. Two thirds of the population of the island are of Spanish descent, but there are many Negroes. **Havana**, the capital and chief seaport, is one of the greatest sugar markets in the world.

There are nearly as many people in the island of Haiti as in Cuba. The western half of the island of Haiti is settled chiefly by Negroes; the eastern half has a mixed population of Negroes and people of Spanish descent. The latter outnumber the former. **Port au Prince** and **Santo Domingo** are the principal cities of the island.

Jamaica and the Bahama islands are peopled largely by Negroes, but there are also many British settlers. **Kingston** and **Nassau** are the commercial centers of these islands.

Barbados is a very thickly-settled island belonging to the British nation. This nation possesses most of the Leeward and the Windward islands. France controls a few of them.

The Bermuda islands, lying far out in the Atlantic ocean (see maps on pages 25 and 163) belong to the British.



CENTRAL EUROPE

SCALE OF MILES
0 50 100 150 200 250 300

Longitude A West 0 B 5 Longitude C 10 East D 15 from E 20 Greenwich F 25

glass. The Rhine and other river valleys of this country are famous for their wine grapes. Large areas are planted with sugar beets and with cereals.

This country imports cotton from the United States; wool and flax from Russia and Hungary; raw silk from Italy.



Marseille.

The principal manufactures of Germany are cloth, iron articles, beet sugar, glass and porcelain. Large quantities of these articles are sent to the United States. Besides cotton, our country sends grain, meat, petroleum and tobacco to Germany, — largely through the port of Hamburg. Germany ranks second among commercial countries.

Berlin, the capital, is the third city in size in Europe. This city is a great trade center, and is the seat of a famous university.

Leipzig has a large university, and is noted for book-publishing. Munich and Dresden have great galleries of painting and sculpture.

Hamburg, on the tide water of the Elbe, is the leading port of inland of Europe.

The products and manufactures of France re-

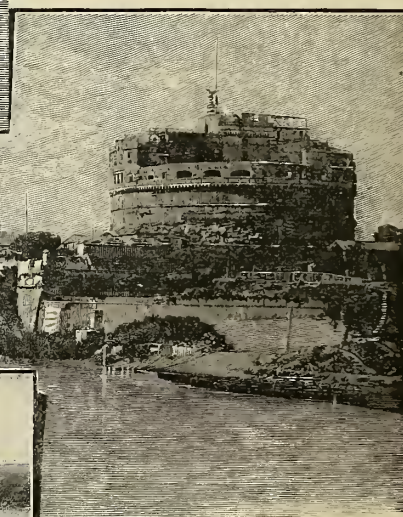
Havre, at the mouth of the Seine, is the port of Paris. Steamers from Havre reach nearly all great seaports. Among the French exports to our country are silks, woolens and millinery goods. The United States sends about the same kinds of goods to Havre as to Hamburg.

Among the articles sent from Paris to New York are leather goods, feathers, buttons, fans and jewelry.

Lyon, the center of the silk manufactures, is not far from the coal region of the Cevennes, nor from the silkworm district of southern France.

Marseille is the largest port of this country. A canal from the Rhone river to this city makes it the chief port of the Rhone valley.

The Garonne basin produces great quantities of grapes. Toulouse is in the vineyard district. This city and Bordeaux are famous for red wines. Lisle is in the flax-growing region of northern France, and is near coal mines. This



Rome.



Constantinople, on the Bosphorus.

city has large mills for the manufacture of linen cloth and thread.

BELGIUM. Belgium has valuable coal mines, and is in the flax district. Laces and linen are important manufactures in this country. Sugar beets are a lead-

ing crop in Belgium. Here are also beds of excellent sand for glass-making. The most valuable exports from this country to the United States are beet sugar, glassware, cloth and firearms.

Antwerp, the chief port, is the center of the railroad and canal systems which reach nearly all parts of Belgium.

Brussels is noted for carpets and laces. **Liege** is well known for its firearms.

THE NETHERLANDS OR HOLLAND. The people of this country are largely engaged in dairying and in raising cereals. Holland has many colonies, among which are Java, Sumatra and Dutch Guiana. These colonies send tobacco, tea, coffee, sugar and spices to Holland.

Amsterdam and **Rotterdam** are important ports. Many skillful diamond-cutters live in these cities. Diamonds and tobacco are the principal exports from Holland to our country.

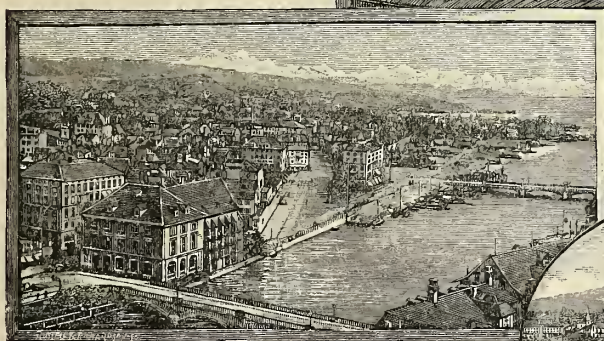
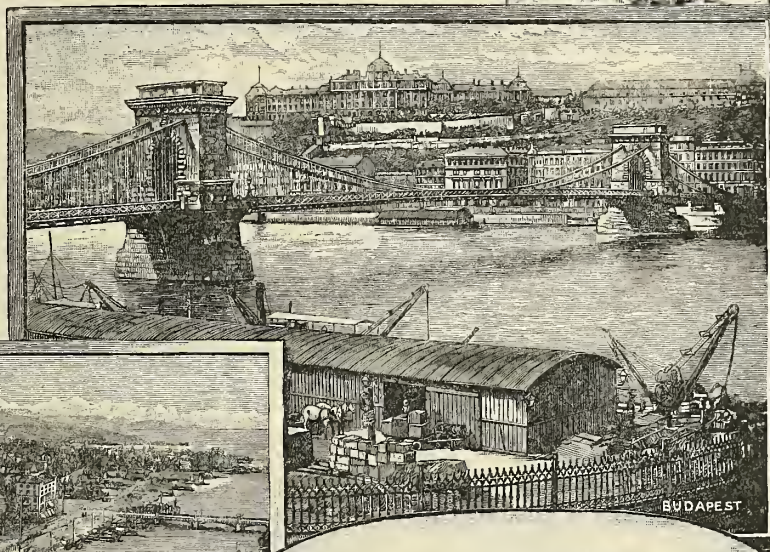
DENMARK. This country resembles Holland in its products. **Copenhagen** is the capital and principal city. Greenland and Iceland belong to the Danes.



149. Mediterranean Countries.

SPAIN. **Madrid**, the capital and largest city of Spain, is in the central plateau.

Barcelona is the chief city of eastern Spain. This city exports fruits, olive oil, silk and wine. **Valencia** is noted for its fine silk manufactures. **Malaga** is a wine and fruit port.



Zurich.

PORTUGAL. **Lisbon** is the principal trade center of Portugal. This city, as **Oporto** farther north, has a large trade in wine and in olive oil.

ITALY. The leading exports of this country are silks, wine, oil and fruits. The imports are raw cotton, sugar, coffee and other food supplies.

Naples, on the beautiful bay of the same name, is the largest city in Italy.

Rome, the capital, contains the Vatican, or residence of the Pope; and St. Peter's, the largest cathedral in the world. This city is famous for its historic ruins.

Milan is the most important city in the Po valley. **Genoa** is the chief port of northwest Italy. **Florence** and **Venice** have famous art galleries.

TURKEY AND GREECE. The trade of the United States with these two countries, as well as with the other Balkan

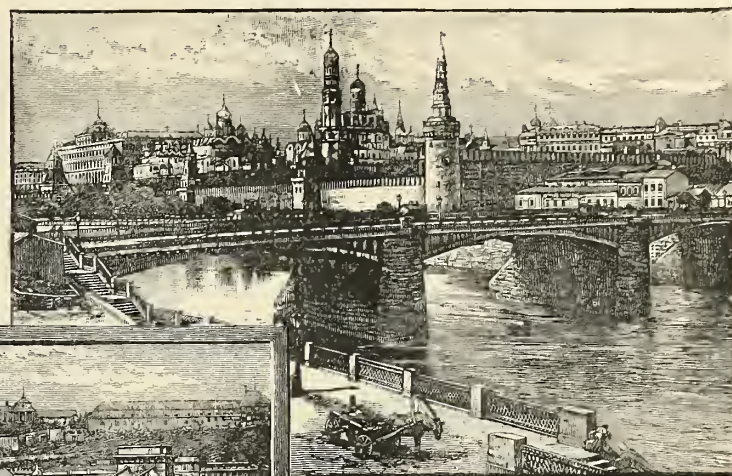
states, is very small. **Constantinople** is the capital of the Ottoman Empire, including Turkey in Europe, Turkey in Asia, Egypt and Tripoli. The chief ruler, or *sultan*, is the head of the Mohammedan religion.

Athens, the capital of Greece, is famous for its history, and for the ruins of its ancient temples.



150. Other Countries of Europe.

SWITZERLAND. The swift streams of this country



Kremlin, Moscow.

supply good water power. Raw silk is brought from Italy; cotton from our country; flax from the countries of Low Europe. Switzerland manufactures laces, silks and cotton cloth. **Zurich** is the principal manufacturing city.

Geneva is noted for its watches, clocks and music boxes.

Dairying and hotel-keeping leading industries in Switzerland. Every summer sands of tourists visit country to see its mountains, glaciers, lakes and waterfalls.

AUSTRIA-HUNGARY. The plain of Hungary yields grain, beets and grapes. Cattle

here find good pasturage. The surrounding country is rich in minerals. The higher slopes

Vienna is the railroad center of the empire. It is a river port. This city has one of the oldest universities in the world.

Budapest, on the Danube, is the largest city in Hungary. It is the principal port of Hungary. **Triest** is the principal port of the Adriatic.

RUSSIA. **St. Petersburg** is the capital of the Empire. Railroads and canals connect the productive parts of the great plain. The leading exports are wheat and flax.



Geneva.

Moscow is the railroad center of the empire. This city has an immense trade, not only with other parts of European Russia, but also with Siberia.

The *Kremlin*, an old fortress in Moscow, covers about one hundred acres. Within its walls are many famous buildings.

Odessa and **Riga** are important ports. The former is the largest city on the Black sea and is a famous wheat port.

NORWAY AND SWEDEN. These countries are united under one king. The United States has not much trade with either.

Christiania is the chief port of Norway. It has a large trade in lumber. **Bergen** is the second port of this country.

Stockholm is the principal city of Sweden. **Gottenborg** is the leading port.

One of the most important aids to commerce in Europe is the system of canals and rivers forming a network over the lowlands, and even uniting the large rivers in the highland region.

In some countries more freight is carried on the canals than on the railroads.



SOUTH AMERICA.

Review and Map Studies.

Loc.; — the surface of Brazil; — of Argentina; —

out the climate and the products of the
— of the pampas; — of the highland of

What two countries is lake Titicaca?
America are crossed by the equator?
greater part of the Orinoco basin?
a broad Plata river mouth? Which
not border on Brazil? Which coun-

To which countries does Tierra del Fuego belong? To what empire do the Falkland islands belong? What small countries in South America belong to European nations? What is the form of government of all the countries of this continent, except the Guianas? See lesson 91.

152. Countries of South America.¹

BRAZIL. Rio de Janeiro, the capital of this republic, is on a deep and spacious harbor, sheltered by hills on all sides. This port is near the richest coffee district of Brazil, and is the largest coffee market in the world; but Santos, a small seaport southwest of Rio de Janeiro, is a close rival.

Other exports from Rio de Janeiro are sugar, hides, tobacco and diamonds.

The principal imports into Brazil are cotton cloth and machinery.

Bahia, a large port northeastward from Rio de Janeiro, resembles the latter in its foreign trade. **Pernambuco** is the leading sugar port of Brazil. This is one of the

¹ Brazil was settled by Portuguese, and their language is still spoken there. Spanish is the language of the other countries except the Guianas.



Brazilian ports partly inclosed by long rocky reefs. *See picture on page 58.*

Pará is on one of the wide distributaries of the Amazon. This city has a large rubber trade.

Other exports from the Amazon basin, mostly through Pará, are cocoa, Brazil nuts, hides and Peruvian bark.

ARGENTINA. The people of Argentina are engaged chiefly in raising cattle, sheep, wheat and Indian corn. They export grain and beef products.

Buenos Ayres, one of the principal ports of the continent, has a large foreign trade in hides, wool and wheat. The leading imports are cloth and railway materials.

Cordoba and La Plata are important trade centers. The former has a university and an academy of sciences.

URUGUAY. A large part of this country is grazing land for cattle and sheep. Wool and hides are the principal exports. Montevideo is the capital and the largest port.

PARAGUAY. In this small republic the most valuable product is Paraguay tea, or *yerba maté*. Asuncion, the capital, is the commercial center.

CHILE. This republic has great mineral wealth. In the desert district of Atacama are found great quantities of niter, — a whitish salt used in the manufacture of gunpowder. Copper and silver are abundant in the northern half of Chile.

Rich mines of coal are being worked in the southern half of this country.

The principal farming products of Chile are wheat and wine grapes.

Valparaiso is the chief port. Most of the imports, — such as cloth, cattle and sugar, — are received into this city. Large quantities of niter and copper are shipped from the northern seaport of Iquique.

Santiago is the capital and largest city of Chile. This is one of the Andean cities which are built far above the unhealthy coastal region. Santiago is in a wide valley on the western slope of the Andes, more than one third of a mile above sea level.

BOLIVIA. This country has rich mines of silver. Its rubber product is of the finest quality.

What have you read about cinchona? *See lesson 46.*

Bolivia has no seaport, but many of its products are exported through Buenos Ayres, Arica (Chile) and other

Paz and Sucre are the principal cities. Potosi is its silver mines.

PERU. Sugar cane and cotton are raised in the flood plains of the small rivers of western Peru. Sheep and alpacas are reared in the highlands. Sugar, cotton and wool are the leading exports. Cloth is the most valuable article of import.

Lima is the largest city of this country. Callao is one of the principal seaports of western South America.

ECUADOR. The staple product of Ecuador is cocoa. This country, like all the others crossed by the Andes, has rich mineral deposits.

Quito is the capital. Guyaquil is the largest city.

COLOMBIA. The leading export of this country is coffee.

Bogotá, the capital, is over a mile and a half above sea level. Panama, at the Pacific end of the Panama railroad, is an important port.

A large portion of the freight which passes between the Atlantic and the Pacific ports of our country goes through Panama.

VENEZUELA. Coffee is the most valuable export from Venezuela. Many hides are shipped from the Orinoco basin. Carácas and Valencia are the most important cities of this country.

GUIANA. The three colonies of Guiana are not thickly settled, and the value of their trade is not very great. Sugar is the leading export. Georgetown, Paramaribo and Cayenne,

the capitals of the colonies, are the most important centers of trade.



A Square in Montevideo.

ASIA.

153. Review and Map Studies.

There are five divisions of the Chinese Empire, namely: China, Tibet, Mongolia, Eastern Turkestan and Manchuria. Describe the surface, the climate and the products of this great empire. *See lessons 60, 57 and 56.*

In like manner describe India (*see lesson 61*); — Siberia (*see lesson 59*); — Japan (*see lesson 62*); — Persia, Turkey and Arabia (*see lesson 58*); — Java, Sumatra and the Philippine islands (*see lesson 62*). *See Supplement for Philip*

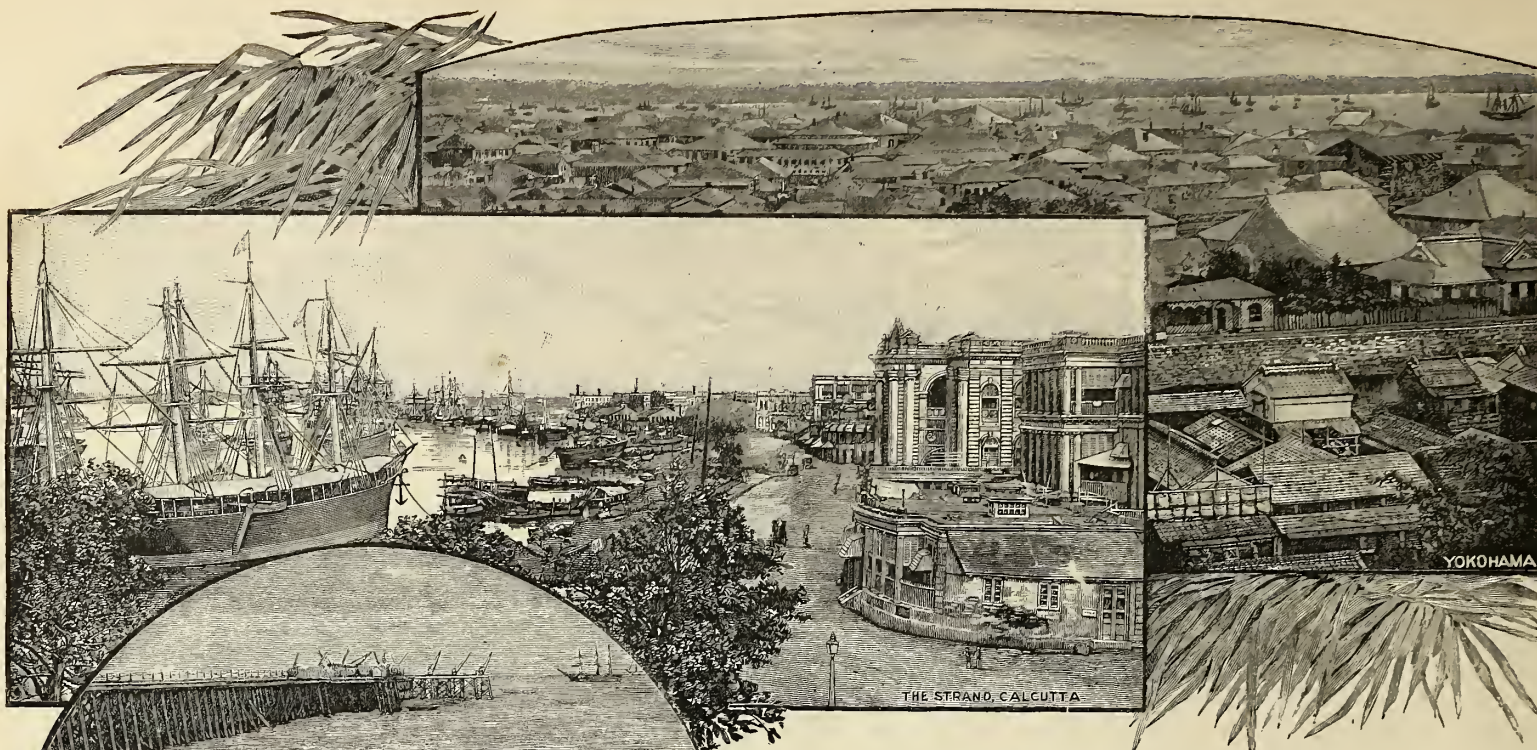
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are Anam and Siam? What countries
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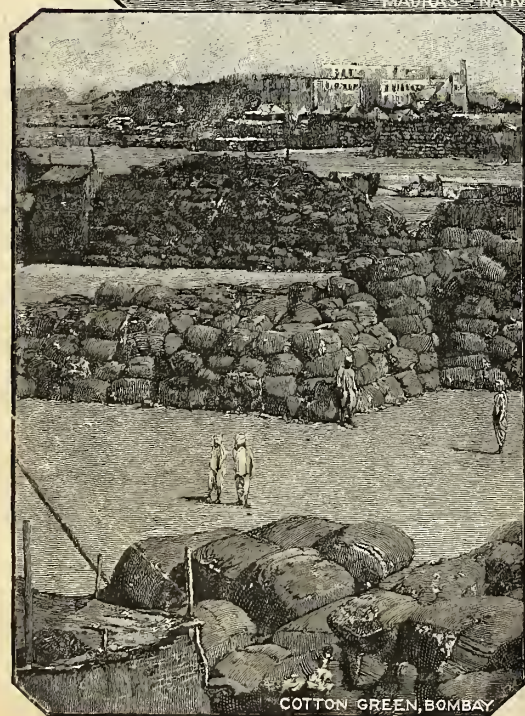
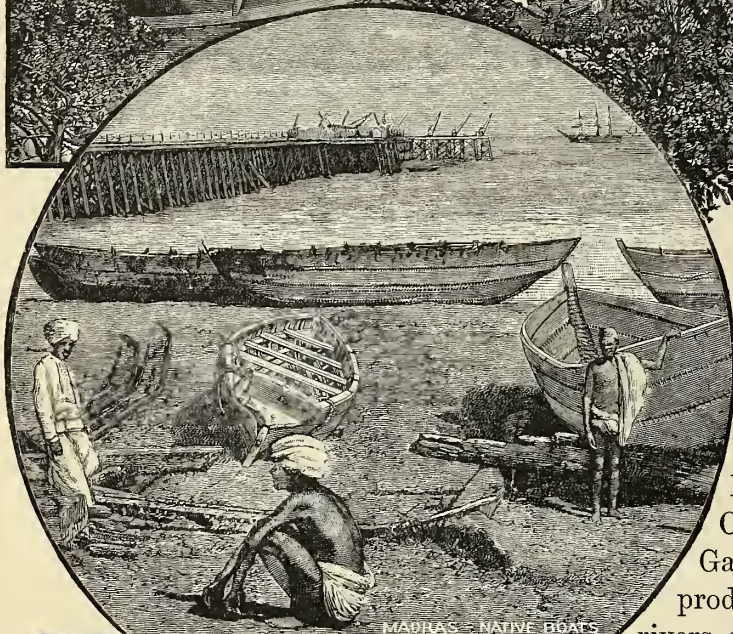
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Comparative Area
PENN.
55,000
sq. miles
CONTAINING 200,000,000



154. Countries of Asia.



INDIA. This country trades chiefly with Great Britain and with China. The most valuable exports from India are cotton and cotton seed, wheat, rice, opium, jute, tea and indigo. The principal imports are cotton cloth and hardware. **Bombay** and **Calcutta** are the greatest seaports of India. Each is about as large as the city of Philadelphia. Calcutta, the capital of India, is on the Hugli river, in the Ganges delta. This city is the principal shipping-point for the produce of the Ganges and the Brahmaputra basins. Railroads, rivers and canals form the inland highways of trade to and from this great port. No large rivers carry products to Bombay, but the city is reached by railroads from nearly all parts of India. This port owes its rapid growth largely to its situation on the west coast, being much nearer than Calcutta to the Suez canal and the British Isles.

Madras is the largest seaport of southern India.

Benares is the chief seat of the Hindu religion, and is one of the oldest cities in the world. In this holy city of the Hindus, the north bank of the Ganges is lined with great temples. **Rangoon** is the chief port of Burmese India. This city has a large trade in rice. **Delhi** and **Mandalay** are large centers of trade in India. See picture of old Delhi, page 68.



Village on the Mekong River.

Locate Colombo and Singapore. What have you learned about the latter city? See lesson 132. Ceylon and the Straits Settlements, as well as India, are British possessions.¹

¹ France and Portugal control a few small colonies in the southern and western parts of India.



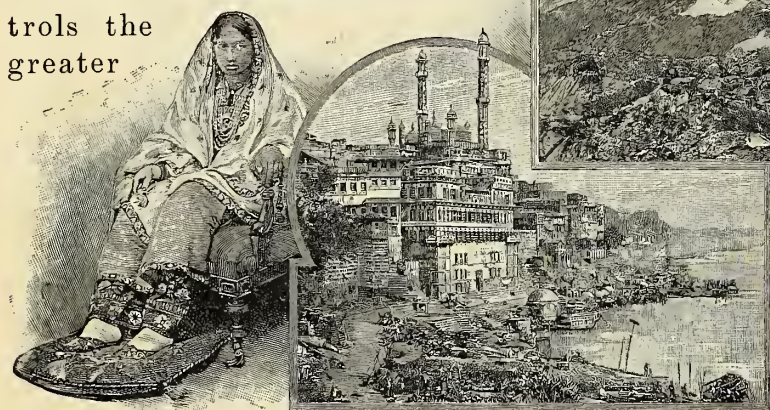
FRENCH INDO-CHINA. French Indo-China includes Anam, Cochin-China, Cambodia and other provinces. All these are under the control of France. The products of French Indo-China are similar to those of British India. **Hanoi**, **Hué**, **Saigon** and **Pnom Penh** are the chief centers of trade.

SIAM. This country is ruled by a native king,—an absolute monarch. The resources of the country are poorly developed. Teak and rice are the principal products. **Bangkok** is the capital.

EAST INDIES. Sumatra, Java, Celebes, and middle and southern Borneo are possessions of Holland. They are called the *Dutch East Indies*. Northwest Borneo is under the control of the British nation. The United States controls the Philippines.

What have you learned about the islands named above? Locate Manila, Batavia and Makassar. See map on page 183.

CHINA. The British nation controls the greater



Woman of India.

Benares on the Ganges.



Children of Korea.

part of China's foreign trade, though the United States has a small share in it. The island of Hongkong, on the coast of China, is a British colony. It exports Chinese tea and silk; and imports opium, cotton cloth, sugar and flour for the great empire near by. The United States imports tea and silk from China,—chiefly from the ports of **Shanghai**, **Canton** and **Fuchau**.

Pekin, the capital, and **Canton** are the largest cities of the Chinese Empire. **Yarkhand** is in the principal oasis of the province of Eastern Turkestan. **Lassa** is the chief city of Tibet.

JAPAN. Japan is the only limited monarchy in Asia, having its own ruler. All the other independent coun-



Village in the Philippine Islands.

tries are absolute monarchies. The exports of Japan are taken from its rice swamps, its silk-worm nurseries and its tea farms. The imports are mostly cloth, metal goods and petroleum. Japanese trade is carried on chiefly

with the United States and with Great Britain. Japan is the most progressive of Asiatic countries. The Japanese have good schools, railway and telegraph lines, and large manufactories. Among the latter are iron foundries, glass-works, paper mills, cotton and silk mills. The people of Japan are noted for the weaving of silk and carving of ivory. Formosa belongs to Japan.

Tokyo is the capital and the commercial center of Japan. Only two cities in America are larger than Tokyo. **Yokohama**, on the bay of Tokyo, is the chief seaport. **Osaka** has important manufactures. Round **Kyoto** are many Buddhist temples.

KOREA. The foreign trade of this country is small. **Seoul** is the chief city of Korea.

After the China-Japanese war of 1895, Korea was made an independent kingdom.

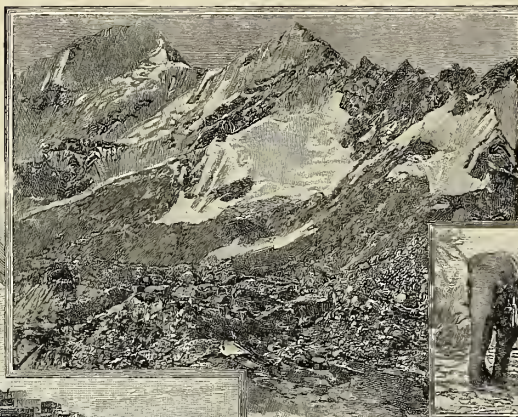
RUSSIA IN ASIA. Siberia and Trans-Caucasia¹ are parts of the great Russian Empire, which comprises about

one seventh of the land-surface of the earth. **Bokhara**

¹ Trans-Caucasia is the name of the Asiatic portion of the large Russian province lying on both sides of the Caucasus mountains.



Man of Borneo.



Himalaya Mts.



Natives of Ceylon.



Himalaya Mountains.

and Khiva also are under the control of Russia. **Tashkent**, the largest city in Asiatic Russia, is in a district made fertile by irrigation. **Tiflis** is a city through which Russia conducts a large part of its trade with Persia and other countries of southwest Asia. The railroad which carries great quantities of petroleum from **Baku** to the port of **Batum** passes through Tiflis. **Irkutsk** and **Vladivostok** are centers of Siberian trade. The latter city is the Pacific port of Siberia, and the present terminus of the Siberian railroad now being built.

Doubtless some port farther south will be made a terminus of this railroad, as the harbor of Vladivostok is frozen several months each year.

PERSIA. Cereals and the opium-poppy grow in the fertile portions of Persia, chiefly in the districts near the Caspian sea. Many sheep are reared in the highland regions. Dates thrive along the coast, and pearls are obtained from the border waters on the south. The Persians are famous for their handmade carpets and rugs. **Teheran** and **Tabriz** are the principal cities.

AFGHANISTAN. This country is crossed by the caravan routes leading to India. **Kabul** is the chief city.

BALUCHISTAN. The people of this rugged country are mostly shepherds. **Khelat** is the largest city.

ASIATIC TURKEY. The products are similar to those

of Persia, but the Red sea coast is famous for its coffee. **Mocha** is the chief port for the shipment of this coffee. **Mohammed** was born in **Mecca**.

Smyrna is the largest city and port of Asiatic Turkey. **Damascus** has an extensive caravan trade. **Jerusalem** is famous for its religious history.

ARABIA. Arabia, like Persia and Turkey, is a Mohammedan country. See lesson 91.

OMAN. **Maskat** exports dates, and imports rice.

AFRICA.

155. Countries of Africa.

EGYPT. This country is nominally part of the Ottoman Empire, though the Sultan of Turkey has very little control over the affairs of Egypt. The *Khedive*, or ruler, of Egypt resides in **Cairo**, the capital. This is one of the oldest and most famous cities in the world.

What have you learned about Cairo? See page 90. Compare the location of this city with that of New Orleans. Which is farther from the equator?

The principal exports

of Egypt are cotton and cotton seed. The most valuable imports here, as in all other African

countries, are various kinds of cloth. Great Britain controls the greater part of the foreign trade of Egypt. **Alexandria**, in the Nile delta, is the largest seaport of this country.

Before the discovery of the route from Europe to India by way of the cape of Good Hope, Alexandria was one of the greatest ports in the world. When the East India trade with western Europe was turned away from the Mediterranean sea, the port in the Nile delta rapidly declined. The building of the Suez canal has greatly increased the trade of Alexandria.

TRIPOLI. This portion of the Ottoman Empire is thinly settled. The population of the entire country of Tripoli is smaller than that of Philadelphia. The capital is the only important city.

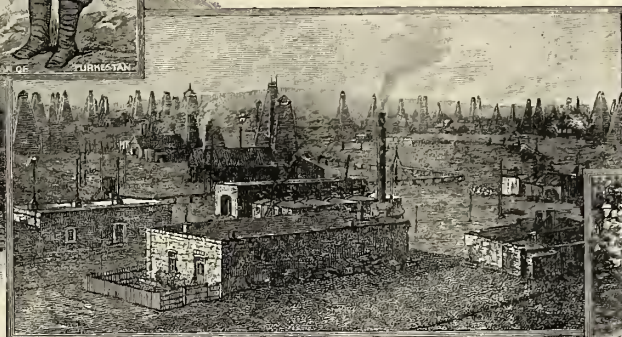
TUNIS AND ALGERIA. These countries have been added to the possessions of France.

The coastal districts of Tunis and Algeria have many fertile valleys that produce wheat. Olives grow here in abundance, and cattle and sheep find good grazing land.

(Text of lesson 155 is continued on page 180.)



A Georgian of Tiflis.



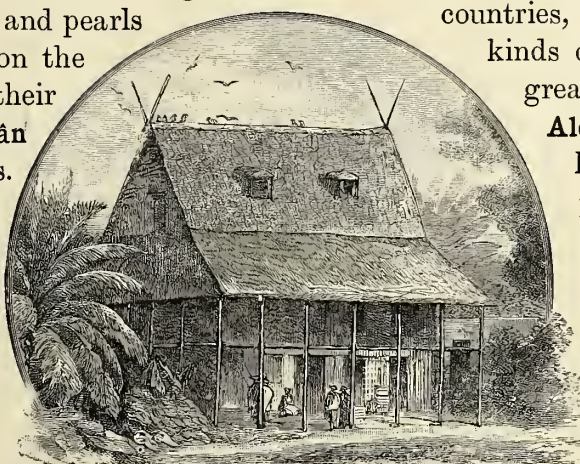
Oil Wells near Baku.



Girl of Armenia.



Natives of Caucasus Mts.



House in Madagascar.



Zulu Chief.



Negro.

156. Review and Map Studies.

Describe the Nile basin. *See lesson 76.* What part of this basin is in Egypt? — In Nubia? What European nation claims the region about the highland of Abyssinia?

Where is Tripoli? Where is Morocco? Describe the Sahara. *See lesson 77.* In what respect does the Sudan differ from the Sahara? *See lesson 78.* Locate Liberia



Cairo, Egypt.



Alexandria.

SIERRA LEONE. This small colony belongs to the British nation. **Freetown** exports palm oil.

LIBERIA. This is a negro republic settled largely by freed slaves from the United States. **Monrovia**, the capital, is named after a former President of our country. The chief exports from Monrovia are coffee and palm oil.

KONGO STATE. The King of the Belgians is the ruler of the Kongo State. **Boma** is the local capital.

The most valuable exports of the Kongo State are coffee, rubber, ivory and palm oil.

TRANSVAAL. Transvaal, or the South African Republic, has rich gold fields. The white settlers are chiefly English and Dutch. The latter, known as *Boers*, direct the affairs of the state. **Johannesburg**, in the heart of the gold region, has had a very rapid growth. **Pretoria** is the capital.

CAPE COLONY. Cape Colony is a large and valuable British possession. *See lesson 80.* **Cape Town** is the chief city. It exports diamonds, wool, ostrich feathers and hides. **Kimberley** has the richest diamond mines in the world.

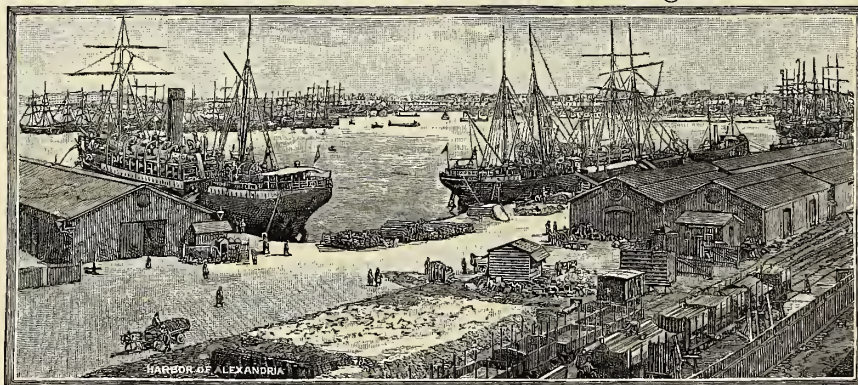
and Sierra Leone. What nation claims the region stretching north-eastward from Liberia to the Mediterranean sea?

What state or country comprises the greater part of the Kongo basin? Between what two European claims is lake Victoria?

What lake partly separates Kongo State from German East Africa? Where is the territory known as the French Kongo?

What European nation claims a broad coastal belt on both sides of the lower Zambezi? What name is given to the middle region of the Zambezi basin? What European nation controls Cape Colony? *See lesson 80.* Describe its resources. Locate the Orange Free State. What country is on the north of the Free State? What have you learned about Madagascar? *See lesson 80.* Locate the Madeira, the Canary and the Mauritius islands. Locate Zanzibar, Tananarivo, Mozambique.

(Lesson 155, cont.)



Arab praying in the Desert.



Arabs of Cairo.

The cities of **Tunis** and **Algiers** export wheat, olive oil, wool and hides to France.

MOROCCO. The products of this country are similar to those of Algeria. **Fez** and **Morocco** are the principal cities of Morocco.

European nations have seized nearly all parts of Africa, as the map shows. France not only claims large areas on the mainland, but is also seeking to control Madagascar; Great Britain, Germany and Portugal possess most of middle and southern Africa. Spain has a footing in the Sahara. Abyssinia is independent.



157. Review and Map Studies.

Describe the surface of Australia. Tell what you can about its climate. *See maps on pages 21 and 22; also lesson 81.*

In what part of Australia is the colony of Victoria? Where is Queensland? What colony is between Victoria and Queensland?

Which colony occupies a broad belt stretching north and south

that support millions of sheep and cattle. Large areas are planted with wheat, Indian corn and other cereals. Great quantities of gold and tin are mined. Middle and Western Australia are thinly settled.

The principal exports from Australia are wool, gold and cereals. The most valuable imports are cloth and



islands; — the
— Micronesia; — the Hawaiian islands. *See lesson 83.*

158. Colonies of Australia.

The colonies in the southeastern part of this continent are the most thriving. Here are vast grazing districts

across this continent?
What name is given to
the most westerly colony
in Australia? Locate Tas-
mania.

Tell what you have learned about
New Zealand; — Papua; — the Fiji
Friendly islands; — the Samoa islands;

iron manufactures. The largest seaports are in south-east Australia, in the productive colonies.

Melbourne, the chief seaport of Victoria, is the largest city of Australia. Its population is almost as large as that of Boston. Melbourne has extensive manufactures.

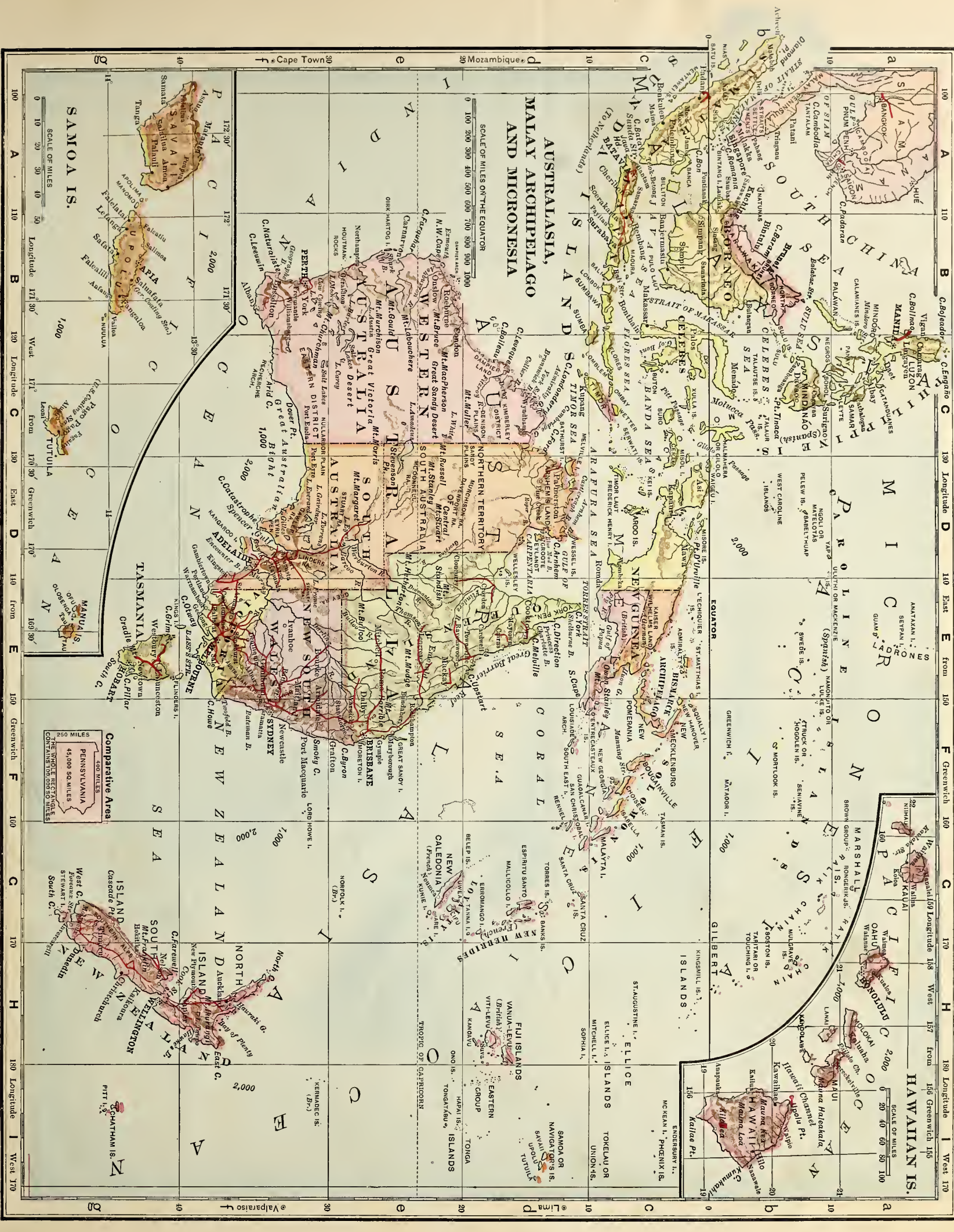
Sydney, the principal port of New South Wales, is on a long and deep landlocked bay. This is the oldest and the second largest city in Australia.

Adelaide is the commercial center of South Australia. **Brisbane**, on the river of the same name, is the capital and leading port of Queensland. **Hobart** is an important port of Tasmania.

159. New Zealand.

NEW ZEALAND. The most valuable exports from New Zealand are wool, gold and frozen meat. **Dunedin** is the chief port of the South island; **Auckland**, of the North island. **Wellington** is the capital.

On the groups of islands lying far out in the Pacific ocean, there are few large towns. **Honolulu** (*see the supplement*) is the most important of these mid-ocean centers of trade. This city is the capital of the Hawaiian islands.



Hazel W. Hatchurst.

Newville.

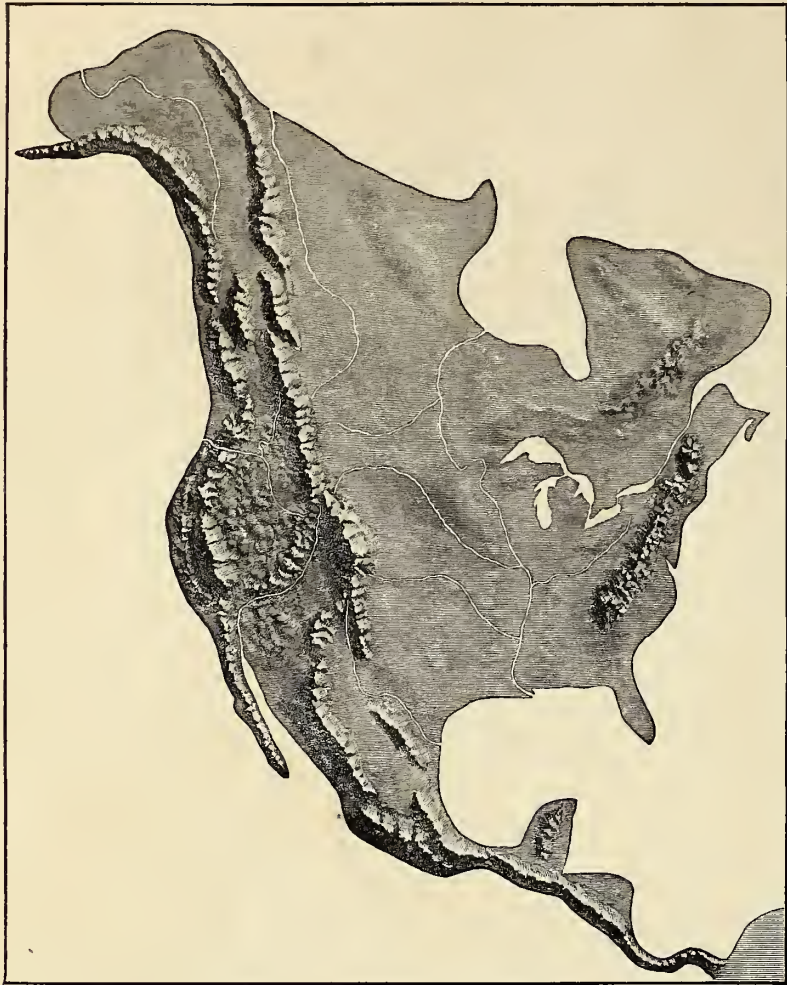
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Rivers, — Lengths and Drainage Areas.¹



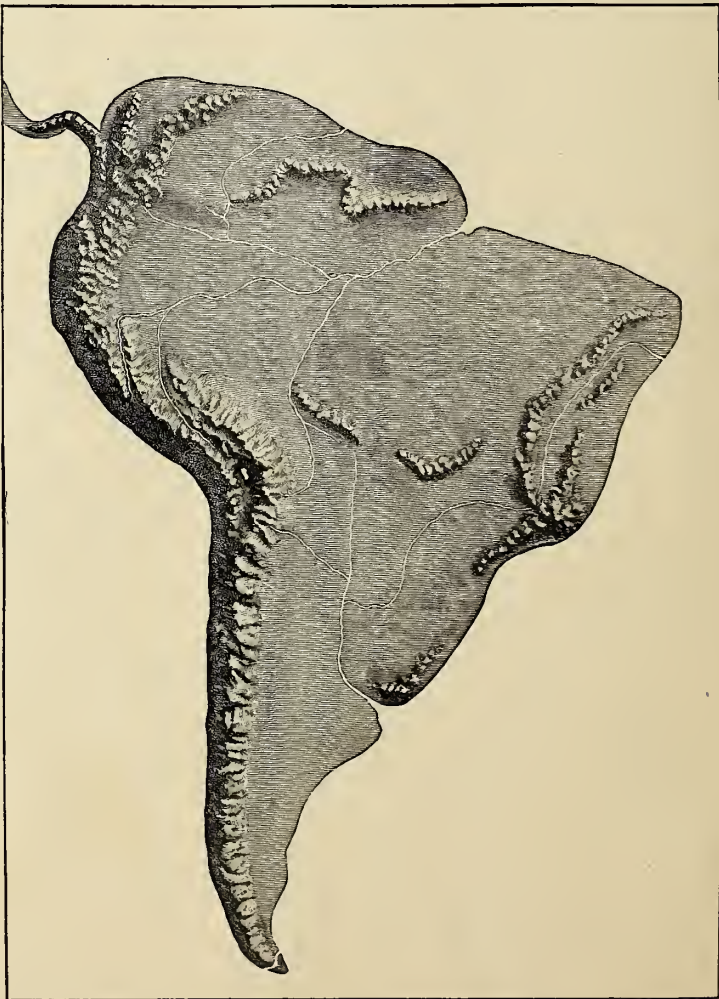
NORTH AMERICA.			
Name.	System.	Length in Miles.	Basin Area Sq. Miles.
Colorado	Pacific	1,100	250,000
Columbia	Pacific	1,400	250,000
Mackenzie	Arctic	2,400	440,000
Missouri-Mississippi	Atlantic	4,200	1,250,000
Nelson	Atlantic	1,800	355,000
Rio Grande	Atlantic	1,800	180,000
St. Lawrence	Atlantic	2,000	350,000
Yukon	Pacific	2,000	440,000
SOUTH AMERICA.			
Amazon	Atlantic	4,000	2,500,000
Plata	Atlantic	2,300	1,250,000
Orinoco	Atlantic	1,500	300,000
San Francisco	Atlantic	1,680	190,000
EUROPE.			
Danube	Atlantic	2,000	300,000
Dnieper	Atlantic	1,230	175,000
Dwina	Arctic	700	140,000
Elbe	Atlantic	550	42,000
Rhine	Atlantic	960	65,000
Rhone	Atlantic	550	33,000
Seine	Atlantic	497	23,000
Thames	Atlantic	215	6,000
Volga	Interior	2,300	500,000
ASIA.			
Amur	Pacific	1,500	600,000
Brahmaputra	Indian	2,000	425,000
Ganges	Indian	1,800	450,000
Hoangho	Pacific	2,700	540,000
Indus	Indian	2,000	320,000
Lena	Arctic	2,550	600,000
Obi	Arctic	2,500	920,000
Yangtze	Pacific	3,300	500,000
AFRICA.			
Kongo	Atlantic	3,300	1,500,000
Niger	Atlantic	3,500	600,000
Nile	Atlantic	4,000	1,400,000
Zambezi	Indian	1,800	440,000

Guide Maps for Drawing and Modeling the Continents.

The relief maps on this page and on the two following pages are intended as guides for drawing and modeling the continents. These maps are purposely made very simple, yet they show the natural features which exert the greatest influence upon the distribution of climates, plants and animals.

Pupils should learn to sketch these maps from memory, without the aid of straight guide-lines, except such as they themselves invent.

The *Teachers' Manual* offers suggestions upon methods of drawing and modeling the continents.



Areas of Continents and Oceans.

	SQUARE MILES.		SQUARE MILES.
North America	8,000,000	Pacific	70,000,000
South America	6,850,000	Atlantic	35,000,000
Europe	3,800,000	Indian	23,000,000
Asia	17,000,000	Antarctic	7,000,000
Africa	11,500,000	Arctic	4,000,000
Australia	3,000,000	Inland Waters	750,000

Total Population of the World, 1,500,000,000.

Caucasian	690,000,000	Christians	400,000,000
Mongolian	600,000,000	Buddhists	500,000,000
Negro	150,000,000	Mohammedans	200,000,000
Malay	35,000,000	Bramanists	150,000,000
American	12,000,000	Jews	8,000,000
Mixed Races	13,000,000	Pagans and others	242,000,000

¹ The lengths of rivers, and the areas of their basins, are in all cases estimates. Those of Africa are least known. The basin of the Murray river, in Australia, is thought to contain about 500,000 square miles. The area of the Yukon basin cannot now be closely estimated.

Indian Reservations in the United States.

States and Territories.	Area of Indian Reservations.		Population on Reservations (Indians).
	Acres.	Square Miles.	
Arizona	6,400,037	10,000	35,277
California	438,868	686	12,514
Colorado	1,094,400	1,710	1,002
Florida	450
Idaho	2,088,091	3,263	4,185
Indian Territory	19,879,573	,062	71,856
Iowa	2,900	4	388
Kansas	73,796	115	1,102
Michigan	19,799	31	7,428
Minnesota	2,254,781	3,523	6,194
Montana	9,382,400	14,660	10,722
Nebraska	114,550	179	3,863
Nevada	954,135	1,491	8,500
New Mexico	9,495,645	14,837	9,882
New York	87,677	137	5,160
North Carolina	65,211	102	2,885
North Dakota	3,812,833	5,958	7,877
Oklahoma	7,231,747	11,300	12,676
Oregon	1,929,105	3,014	4,523
South Dakota	10,271,501	16,049	18,561
Texas	290
Utah	3,972,480	6,207	2,267
Washington	4,046,564	6,323	9,924
Wisconsin	446,521	698	9,387
Wyoming	1,810,000	2,828	1,724
Miscellaneous	728
Total, 1893	85,872,614	134,176	249,366
Total, 1880	154,741,349	241,800	255,327



Heights of Principal Mountains.

NORTH AMERICA.

Name.	Location.	Height in feet.
Mt. Logan	Canada	19,500
Mt. St. Elias	Alaska	18,010
Popocatepetl	Mexico	17,784
Orizaba	Mexico	17,380
Mt. Hooker	Canada	15,700
Mt. Brown	Canada	16,000
Mt. Whitney	California	14,898
Mt. Rainier	Washington	14,444
Mt. Shasta	California	14,440
Longs peak	Colorado	14,271
Pikes peak	Colorado	14,147
Fremonts peak	Wyoming	13,576
Mt. Wrangel	Alaska	12,066
Mt. Hood	Oregon	11,934
Mt. Mitchell	North Carolina	6,711
Mt. Washington	New Hampshire	6,288
Mt. Marcy	New York	5,467
Mt. Katahdin	Maine	5,385
Jorullo	Mexico	4,265

SOUTH AMERICA.

Aconcagua	Chile	22,422
Chimborazo	Ecuador	21,420
Arequipa	Peru	20,320
Cotopaxi	Ecuador	18,880
Tolima	Colombia	18,069
Roraima	Venezuela	7,874
Itacolumi	Brazil	5,740
Itambe	Brazil	4,300

EUROPE.

Elburz	Russia	18,526
Mt. Blanc	France	15,810
Monte Rosa	Italy	15,208
Olympus	Turkey	9,745
Etna	Sicily	9,652
Ymesfield	Norway	8,543
Ben-Nevis	Scotland	4,368
Vesuvius	Italy	3,948
Snowdon	Wales	3,571
Stromboli	Lipari Islands	3,090

ASIA.

Mt. Everest	India	29,002
Dapsang	Tibet	28,278
Kanchanjanga	India	28,156
Demavend	Persia	18,500
Ararat	Turkey	17,260
Mt. Hermon	Palestine	11,000
Mt. Sinai	Turkey	8,593

AFRICA.

Kilimanjaro	East Africa	19,600
Kenia	East Africa	18,045
Tenerife	Canary Islands	12,000
Mt. Miltsein	Morocco	11,400
Peak of Pico	Azores	7,013

OCEANIA.

Mauna Loa	Hawaiian Islands	13,600
Mt. Kosciusko	Australia	7,176
Kilauea	Hawaiian Islands	4,040



Principal Lakes of the World.

Name.	Area in Sq. Miles.	Elevation in Feet.	Depth in Feet.
Aral Sea	26,000	48	..
Caspian Sea	170,000	— 84	3,000
Dead Sea	320	— 1,312	700
Great Salt Lake	2,000	4,200	60
Lake Baikal	12,500	490	4,500
Lake Chapala	1,300	7,000	..
Lake Erie	7,750	573	120
Lake Huron	20,000	581	700
Lake Ladoga	7,000	55	730
Lake Michigan	22,000	581	875
Lake Nicaragua	3,650	130	240
Lake Ontario	6,950	247	735
Lake Superior	31,500	602	1,008
Lake Titicaca	4,000	12,874	..
Lake Victoria	40,000	3,300	..

190. 219.9 /

the United States
Name the first ten largest cities



Leading Cities
of the United States.

CITIES.	POPULATION (1890).
1 New York, N. Y.	1,515,301+
2 Chicago, Ill.	1,099,850
3 Philadelphia, Pa.	1,046,964
4 Brooklyn, N. Y.	806,343
5 St. Louis, Mo.	451,770
6 Boston, Mass.	448,477
7 Baltimore, Md.	434,439
8 San Francisco, Cal.	298,997
9 Cincinnati, Ohio	296,908
10 Cleveland, Ohio	261,353
11 Buffalo, N. Y.	255,664
12 New Orleans, La.	242,039
13 Pittsburg, Pa.	238,617
14 Washington, D. C.	230,392
15 Detroit, Mich.	205,876
16 Milwaukee, Wis.	204,468
17 Newark, N. J.	181,830
18 Minneapolis, Minn.	164,738
19 Jersey City, N. J.	163,003
20 Louisville, Ky.	161,129
21 Omaha, Neb.	140,452
22 Rochester, N. Y.	133,896
23 St. Paul, Minn.	133,156
24 Kansas City, Mo.	132,716
25 Providence, R. I.	132,146
26 Denver, Colo.	106,713
27 Indianapolis, Ind.	105,436
28 Allegheny, Pa.	105,287
29 Albany, N. Y.	94,923
30 Columbus, O.	88,150
31 Syracuse, N. Y.	88,143
32 Worcester, Mass.	84,655
33 Toledo, O.	81,434
34 Richmond, Va.	81,388
35 New Haven, Conn.	81,298
36 Paterson, N. J.	78,347
37 Lowell, Mass.	77,696
38 Nashville, Tenn.	76,168
39 Scranton, Pa.	75,215
40 Fall River, Mass.	74,398
41 Cambridge, Mass.	70,028
42 Atlanta, Ga.	65,553
43 Memphis, Tenn.	64,495

The United States.

STATES AND TERRITORIES.	AREA IN SQUARE MILES.	POPULATION (1890).
Alabama	52,250	1,513,017
Alaska	531,410	31,795
Arizona	113,020	59,620
Arkansas	53,850	1,128,179
California	158,360	1,208,130
Colorado	103,925	412,198
Connecticut	4,990	746,258
Delaware	2,050	168,493
District of Columbia	70	230,392
Florida	58,680	391,422
Georgia	59,475	1,837,353
Idaho	84,800	84,385
Illinois	56,650	3,826,351
Indiana	36,350	2,192,404
Indian Territory	31,400	186,490
Iowa	56,025	1,911,896
Kansas	82,080	1,427,096
Kentucky	40,400	1,858,635
Louisiana	48,720	1,118,587
Maine	33,040	661,086
Maryland	12,210	1,042,390
Massachusetts	8,315	2,238,943
Michigan	58,915	2,093,889
Minnesota	83,365	1,301,826
Mississippi	46,810	1,289,600
Missouri	69,415	2,679,184
Montana	146,080	132,159
Nebraska	77,510	1,058,910
Nevada	110,700	45,761
New Hampshire	9,305	376,530
New Jersey	7,815	1,444,933
New Mexico	122,580	153,593
New York	49,170	5,997,853

North Carolina	52,250	1,617,947
North Dakota	70,795	182,719
Ohio	41,060	3,672,316
Oklahoma	39,030	61,834
Oregon	96,030	313,767
Pennsylvania	45,215	5,258,014
Rhode Island	1,250	345,506
South Carolina	30,570	1,151,149
South Dakota	77,650	328,808
Tennessee	42,050	1,767,518
Texas	265,780	2,235,523
Utah	84,970	207,905
Vermont	9,565	332,422
Virginia	42,450	1,655,980
Washington	69,180	349,390
West Virginia	24,780	762,794
Wisconsin	56,040	1,686,880
Wyoming	97,890	60,705

States Having the Largest
Negro Population.

STATES.	1890.
Georgia	858,996
Mississippi	744,749
South Carolina	689,141
Alabama	679,299
Virginia	635,858
North Carolina	562,565
Louisiana	560,192
Texas	489,588
Tennessee	430,881
Arkansas	309,427



Cities and Towns of the United States

Having a Population of over 10,000.

CENSUS OF 1890

Akron, O.	27,601	Covington, Ky.	37,371	Jacksonville, Ill.	12,935	Newark, N.J.	181,830	St. Paul, Minn.	133,156
Alameda, Cal.	11,165	Cumberland, Md.	12,729	Jamestown, N.Y.	16,038	Newark, O.	14,270	Salem, Mass.	30,801
Albany, N.Y.	94,923			Janesville, Wis.	10,836	New Bedford, Mass.	40,733	Salt Lake City, Utah	44,843
Alexandria, Va.	14,339	Dallas, Tex.	38,067	Jeffersonville, Ind.	10,666	New Brighton, N.Y.	16,423	San Antonio, Tex.	37,673
Allegheny, Pa.	105,287	Danbury, Conn.	16,552	Jersey City, N.J.	163,003	New Britain, Conn.	16,519	San Diego, Cal.	16,159
Allentown, Pa.	25,228	Danville, Ill.	11,491	Johnstown, Pa.	21,805	New Brunswick, N.J.	18,603	Sandusky, O.	18,471
Alpena, Mich.	11,283	Danville, Va.	10,305	Joliet, Ill.	23,264	Newburgh, N.Y.	23,087	San Francisco, Cal.	298,997
Alton, Ill.	10,294	Davenport, Io.	26,872			Newburyport, Mass.	13,947	San José, Cal.	18,060
Altoona, Pa.	30,337	Dayton, O.	61,220	Kalamazoo, Mich.	17,853	Newcastle, Pa.	11,600	Saratoga Springs, N.Y.	11,975
Amsterdam, N.Y.	17,336	Decatur, Ill.	16,841	Kansas City, Kan.	38,316	New Haven, Conn.	81,298	Savannah, Ga.	43,189
Anderson, Ind.	10,741	Denison, Tex.	10,958	Kansas City, Mo.	132,716	New London, Conn.	13,757	Schenectady, N.Y.	19,902
Ansonia, Conn.	10,342	Denver, Col.	106,713	Keokuk, Io.	14,101	New Orleans, La.	242,039	Scranton, Pa.	75,215
Appleton, Wis.	11,869	Des Moines, Io.	50,093	Key West, Fla.	18,080	Newport, Ky.	24,918	Seattle, Wash.	42,837
Asheville, N.C.	10,235	Detroit, Mich.	205,876	Kingston, N.Y.	21,261	Newport, R.I.	19,457	Sedalia, Mo.	14,068
Atchison, Kan.	13,963	Dover, N.H.	12,790	Knoxville, Tenn.	22,535	Newton, Mass.	24,379	Shamokin, Pa.	14,403
Atlanta, Ga.	65,533	Dubuque, Io.	30,311			New York, N.Y.	1,515,301	Sheboygan, Wis.	16,359
Atlantic City, N.J.	13,055	Duluth, Minn.	33,115	La Crosse, Wis.	25,090	Norfolk, Va.	34,871	Shenandoah, Pa.	15,944
Auburn, Me.	11,250			Lafayette, Ind.	16,243	Norristown, Pa.	19,791	Shreveport, La.	11,979
Auburn, N.Y.	25,858	East Liverpool, O.	10,956	Lancaster, Pa.	32,011	North Adams, Mass.	16,074	Sioux City, Io.	37,806
Augusta, Ga.	33,300	Easton, Pa.	14,481	Lansing, Mich.	13,102	Northampton, Mass.	14,990	Sioux Falls, S.D.	10,177
Augusta, Me.	10,527	East Portland, Ore.	10,532	Lansingburg, N.Y.	10,550	Norwalk, Conn.	17,747	Somerville, Mass.	40,152
Aurora, Ill.	19,688	East St. Louis, Ill.	15,169	Laredo, Tex.	11,319	Norwich, Conn.	16,156	South Bend, Ind.	21,819
Austin, Tex.	14,575	Eau Claire, Wis.	17,415	Lawrence, Mass.	44,654			So. Bethlehem, Pa.	10,302
		Edgewater, N.Y.	14,265	Leadville, Col.	10,384	Oakland, Cal.	48,682	Spokane, Wash.	19,922
Baltimore, Md.	434,439	Elgin, Ill.	17,823	Leavenworth, Kan.	19,768	Ogden, Utah	14,889	Springfield, Ill.	24,963
Bangor, Me.	19,103	Elizabeth, N.J.	37,764	Lebanon, Pa.	14,604	Ogdensburg, N.Y.	11,662	Springfield, Mass.	44,179
Baton Rouge, La.	10,478	Elkhart, Ind.	11,360	Lewiston, Me.	21,701	Oil City, Pa.	10,932	Springfield, Mo.	21,850
Battle Creek, Mich.	13,197	Elmira, N.Y.	30,893	Lexington, Ky.	21,567	Omaha, Neb.	140,452	Springfield, O.	31,895
Bay City, Mich.	27,839	El Paso, Tex.	10,338	Lima, O.	15,981	Orange, N.J.	18,844	Stamford, Conn.	15,700
Bayonne, N.J.	19,033	Erie, Pa.	40,634	Lincoln, Neb.	55,154	Oshkosh, Wis.	22,836	Steubenville, O.	13,394
Beatrice, Neb.	13,836	Evansville, Ind.	50,756	Lincoln, R.I.	20,355	Oswego, N.Y.	21,842	Stillwater, Minn.	11,260
Belleville, Ill.	15,361	Everett, Mass.	11,068	Little Rock, Ark.	25,874	Ottumwa, Io.	14,001	Stockton, Cal.	14,424
Beverly, Mass.	10,821			Lockport, N.Y.	16,038			Streator, Ill.	11,414
Biddeford, Me.	14,443	Fall River, Mass.	74,398	Logansport, Ind.	13,328	Paducah, Ky.	12,797	Superior, Wis.	11,983
Binghamton, N.Y.	35,005	Findlay, O.	18,553	Long Isl'd City, N.Y.	30,506	Passaic, N.J.	13,028	Syracuse, N.Y.	88,143
Birmingham, Ala.	26,178	Fitchburg, Mass.	22,037	Los Angeles, Cal.	50,395	Paterson, N.J.	78,347		
Bloomington, Ill.	20,484	Fond du Lac, Wis.	12,024	Louisville, Ky.	161,129	Pawtucket, R.I.	27,633	Tacoma, Wash.	36,006
Boston, Mass.	448,477	Fort Scott, Kan.	11,946	Lowell, Mass.	77,696	Peabody, Mass.	10,158	Taunton, Mass.	25,448
Bradford, Pa.	10,514	Fort Smith, Ark.	11,311	Lynchburg, Va.	19,709	Pensacola, Fla.	11,750	Terre Haute, Ind.	30,217
Bridgeport, Conn.	48,866	Fort Wayne, Ind.	35,393	Lynn, Mass.	55,727	Peoria, Ill.	41,024	Tiffin, O.	10,801
Bridgeton, N.J.	11,424	Fort Worth, Tex.	23,076			Petersburgh, Va.	22,680	Toledo, O.	81,434
Brockton, Mass.	27,294	Freeport, Ill.	10,189	McKeesport, Pa.	20,741	Philadelphia, Pa.	1,046,964	Topeka, Kan.	31,007
Brookline, Mass.	12,103	Fresno, Cal.	10,818	Macon, Ga.	22,746	Pittsburg, Pa.	238,617	Trenton, N.J.	57,458
Brooklyn, N.Y.	806,343			Madison, Wis.	13,426	Pittsfield, Mass.	17,281	Troy, N.Y.	60,956
Buffalo, N.Y.	255,664	Galesburg, Ill.	15,264	Mahanoy, Pa.	11,286	Pittston, Pa.	10,302		
Burlington, Io.	22,565	Galveston, Tex.	29,084	Malden, Mass.	23,031	Plainfield, N.J.	11,267	Union, N.J.	10,643
Burlington, Vt.	14,590	Gloucester, Mass.	24,651	Manchester, N.H.	44,126	Port Huron, Mich.	13,543	Utica, N.Y.	44,007
Butte, Mont.	10,723	Glouversville, N.Y.	13,864	Manistee, Mich.	12,812	Portland, Me.	36,425		
		Grand Rapids, Mich.	60,278	Mansfield, O.	13,473	Portland, Ore.	46,385	Vicksburg, Miss.	13,373
Cairo, Ill.	10,324	Greenwich, Conn.	10,131	Marinette, Wis.	11,523	Portsmouth, O.	12,394		
Cambridge, Mass.	70,028			Marlboro', Mass.	13,805	Portsmouth, Va.	13,268	Waco, Tex.	14,445
Camden, N.J.	58,313	Hagerstown, Md.	10,118	Massillon, O.	10,092	Pottstown, Pa.	13,285	Waltham, Mass.	18,707
Canton, O.	26,189	Hamilton, O.	17,565	Medford, Mass.	11,079	Pottsville, Pa.	14,117	Warwick, R.I.	17,761
Carbondale, Pa.	10,833	Hannibal, Mo.	12,857	Memphis, Tenn.	64,495	Poughkeepsie, N.Y.	22,206	Washington, D.C.	230,392
Cedar Rapids, Io.	18,020	Harrisburg, Pa.	39,385	Menominee, Mich.	10,630	Providence, R.I.	132,146	Waterbury, Conn.	28,646
Charleston, S.C.	54,955	Hartford, Conn.	53,230	Meriden, Conn.	21,652	Pueblo, Col.	24,558	Watertown, N.Y.	14,725
Charlotte, N.C.	11,557	Hastings, Neb.	13,584	Meridian, Miss.	10,624			West Bay City, Mich.	12,981
Chattanooga, Tenn.	29,100	Haverhill, Mass.	27,412	Michigan City, Ind.	10,776	Quincy, Ill.	31,494	West Troy, N.Y.	12,967
Chelsea, Mass.	27,909	Hazleton, Pa.	11,872	Middletown, N.Y.	11,977	Quincy, Mass.	16,723	Weymouth, Mass.	10,866
Chester, Pa.	20,226	Helena, Mont.	13,834	Millville, N.J.	10,002			Wheeling, W.Va.	34,522
Cheyenne, Wy.	11,690	Hoboken, N.J.	43,648	Milwaukee, Wis.	204,468	Racine, Wis.	21,014	Wichita, Kan.	23,853
Chicago, Ill.	1,099,850	Holyoke, Mass.	35,637	Minneapolis, Minn.	164,738	Raleigh, N.C.	12,678	Wilkesbarre, Pa.	37,718
Chicopee, Mass.	14,050	Hornellsville, N.Y.	10,996	Mobile, Ala.	31,076	Reading, Pa.	58,661	Williamsport, Pa.	27,132
Chillicothe, O.	11,288	Houston, Tex.	27,557	Moline, Ill.	12,000	Richmond, Ind.	16,608	Wilmington, Del.	61,431
Cincinnati, O.	296,908	Huntington, W. Va.	10,108	Montgomery, Ala.	21,883	Richmond, Va.	81,388	Wilmington, N.C.	20,056
Cleveland, O.	261,353	Hyde Park, Mass.	10,193	Mt. Vernon, N.Y.	10,830	Roanoke, Va.	16,159	Winona, Minn.	18,208
Clinton, Io.	13,619			Muncie, Ind.	11,345	Rochester, N.Y.	133,896	Woburn, Mass.	13,499
Clinton, Mass.	10,424	Indianapolis, Ind.	105,433	Muscatine, Io.	11,454	Rockford, Ill.	23,584	Woonsocket, R.I.	20,830
Cohoes, N.Y.	22,509	Ironton, O.	10,939	Muskegon, Mich.	22,702	Rock Island, Ill.	13,634	Worcester, Mass.	84,655
Colorado Sp'gs, Col.	11,140	Ishpeming, Mich.	11,197			Rome, N.Y.	14,991		
Columbia, Pa.	10,599	Ithaca, N.Y.	11,079	Nanticoke, Pa.	10,044	Rutland, Vt.	11,760	Yonkers, N.Y.	32,033
Columbia, S.C.	15,353	Jackson, Mich.	20,798	Nashua, N.H.	19,311			York, Pa.	20,793
Columbus, Ga.	17,303	Jackson, Tenn.	10,039	Nashville, Tenn.	76,168	Sacramento, Cal.	26,386	Youngstown, O.	33,220
Columbus, O.	88,150	Jacksonville, Fla.	17,201	Natchez, Miss.	10,101	Saginaw, Mich.	46,322		
Concord, N.H.	17,004			Nebraska City, Neb.	11,494	St. Joseph, Mo.	52,324		
Council Bluffs, Io.	21,474			New Albany, Ind.	21,059	St. Louis, Mo.	451,770	Zanesville, O.	21,009

PRONOUNCING VOCABULARY.

Key: *āle*, *āt*, *cāre*, *ārm*, *fināl*, *āl*; *ēve*, *ēnd*, *hēr*, *recēt*; *īce*, *īll*, *admirāl*; *ōld*, *fōr*, *ōn*, *anchōr*; *ūse*, *ūp*, *fūr*, *awfūl*; *fōod*, *fōot*; *ch as in chop*; *g as in go*; *ng as in sing*; *n as in ink*; *th as in thin*; *th as in the*; *n as in banyan*; *oi as in oil*; *ow as in cow*; *N nearly like ng in sing* (*French nasal*).

Abaco, ā' bā-kō.
Aberdeen, āb-er-dēn'.
Abomey, āb-ō-mā'.
Abysinia, āb-is-sin' i-g.
Acapulco, ā-kā-pool' kō.
Acaray, ā-kār ā.
Aconagua, ā-kōn-kā' gwā.
Acropolis, ā-krōp' ō-lis.
Adelaide, ād' ē-lād.
Aden, ā' den.
Adige, ād' i-jē.
Adirondack, ād-i-rōn' dāk.
Adrian, ā' dri-an.
Adrianople, ād-rī-an-ō' pl.
Adriatic, ād-rē-āt' ik.
Ægean, ē-jē an.
Afghanistan, āf-gān-is-tān'.
Africa, āf' rī-kā.
Aguas Calientes, ā' guās kā-lē-ān'-tēs.
Aix-la-Chapelle, āks-lā-shā-pēl'.
Ajaccio, ā-jāt chō.
Akron, āk rōn.
Alabama, āl-gā-bā'mā.
Alameda, ā-lā-mā' dā.
Alamo, ā-lā-mō.
Alaska, ā-lās' kā.
Albany, āl' bā-nī.
Albamarle, āl' bē-mār'l.
Alberta, āl-bērt ā.
Albuquerque, āl-bōō-kār' kā.
Alderney, āl der-nī.
Aleutian, ā-lū shī-an.
Alexandria, āl-ēgs-ān' dri-g.
Algeria, āl-jē rī-ā.
Algiers, āl-jēr-z'.
Alleghany, āl' ē-gā-nī.
Allegheny, āl' ē-gā-nī.
Alpena, āl-pēn ā.
Alpine, āl' pīn.
Altai, āl-tī.
Altamaha, āl-tā-mā-hā'.
Altoona, āl-tōō nā.
Amadeus, ām-gā-dē' ūs.
Amazon, ām ā-zōn.
Ameer, ā-mēr.
Amiens, ā' mī-ān.
Amsterdam, ām stēr-dām.
Amur, ā-mōr.
Anaconda, ān-gā-kōn' dā.
Anam, ā-nām'.
Andean, ān-dē an.
Andes, ān dēz.
Andorra, ān-dōr' rā.
Androscoggin, ān-drōs-cōg' in.
Angers, ōn-zhā'.
Anglesey, ān gl-sē.
Annapolis, ān-nāp' ō-lis.
Anniston, ān' is-tōn.
Antarctic, ān-tār'k tīk.
Anticosti, ān-tī-kōs' tī.
Antigua, ān-tē gā.
Antilles, ān-tīl' lēz, or ōn' tēl'.
Antofagasta, ān-tō-fā-gās' tā.
Antwerp, ānt wēr-p.
Apache, ā-pā chā.
Apalachee, āp-gā-lāch' ē.
Apalachicola, ā-pā-lāch-i-kō' lā.
Apennines, āp'en-nīnz.
Apia, ā' pē-ā.
Appalachian, āp-pā-lā' chī-an.
Appomattox, āp-pō-māt' tōks.
Apteryx, āp-tēr-ix.
Arab, ār āb.
Arabian, ā-rā' bī-an.
Arabic, ā-ā-bīk.
Aral, ār āl.
Ararat, ār-gārāt.
Archangel, ārk-ān' jēl.
Archipelago, ār-kī-pēl' ā-gō.
Arctic, ārk tīk.
Ardennes, ār-dēn'.
Arequipa, ā-rā-kē pā.
Argentina, ār-jēn-tē' nā.
Arizona, ār-i-zō nā.
Arkansas, ār-kān-sā'.
Armadillo, ār-mā-dīl' lō.
Arnhem, ārn hēm.
Arno, ār nō.
Arthabaska, ār-thā-bās' kā.
Aryan, ār' yān.
Asben, ās-bēn'.

Asheville, āsh' vīl.
Asia, ā' shī-ā.
Asiatic, ā-shī-āt' ik.
Assiniboia, ās-sin-i-boi' ā.
Assiniboine, ās-sin-i-boin.
Astoria, ās-tō rī-ā.
Astrakhan, ās-trā-kān'.
Atacama, ā-tā-kā' mā.
Atbara, āt-bā' rā.
Atchafalaya, āch-af-gā-lī' ā.
Atchison, āch' i-sōn.
Athabasca, āth-a-bās' kā.
Athens, āth' ēnz.
Atlanta, āt-lān' tā.
Atlantic, āt-lān' tīk.
Atoll, ā-tōl'.
Auburn, ā' būrn.
Auckland, āk' land.
Augusta, ā-gūs' tā.
Aurora, ā-rō rā.
An Sable, ā sā' bl.
Austin, ās' tīn.
Australia, ās-trā' lī-ā.
Australis, ās-trā' līs.
Austria, ās tri-ā.
Avon, ā' vōn.
Azof, ā-zōf'.
Azores, ā-zōr-z'.

Babiroussa, bāb-i-rōōs' sā.
Bahama, bā-hā' mā.
Bahia, bā-ē ā.
Baikal, bī kāl.
Baku, bā-kōō'.
Balearcic, bāl-ē-ār' tīk.
Bali, bāl' ē.
Balize, bāl-ēz'.
Balkan, bāl-kān'.
Balkash, bāl-kāsh'.
Ballarat, bāl-lā-rāt'.
Baltic, bāl' tīk.
Baltimore, bāl-tī-mōr or -mōr.
Baluchistan, bā-lōō-chis-tān'.
Banca, bān' kā.
Bangkok, bān' kōk'.
Bangor, bān' gōr.
Banteng, bān' tēng.
Bantry, bān' trī.
Barbuda, bār-bōō' dā.
Barcelona, bār-se-lō' nā.
Barmen, bār'mēn.
Basel, bā zel.
Basque, bāsk.
Batavia, bā-tā' vī-ā.
Baton Rouge, bāt-ūn rōōz'.
Bayonne, bā-yōn'.
Bayou, bī ōō.
Beatrice, bē' ā-trēs.
Beaufort, bōfōrt (N. C.) or bū-fūrt (S. C.).
Bechuanaland, bēk-ū-ān' ā-lānd.
Bedouin, bēd ōō-ēn.
Belfast, bēl' fāst (Me.) or bēl' fāst' (Ireland).
Belgium, bēl' jī-ūm.
Belgrade, bēl-grād'.
Bellaire, bēl-ār'.
Belle Isle, bēl-il'.
Benares, bēn-ā' rēz.
Bengal, bēn-gāl'.
Benguella, bēn-gā' lā.
Ben-Lomond, bēn-lō mōnd.
Ben-Nevis, bēn-nēv' is.
Berber, bēr' bēr.
Berea, bēr' ē-ā.
Bergwerk, bērg' wēr'k.
Bering, bē' rīng.
Berlin, bēr' līn or Ger. bēr-lēn'.
Bermuda, bēr-mū' dā.
Bern, bērn.
Bethlehem, bēth' lē-hēm.
Bhutan, bōō-tān'.
Biddeford, bīd' ē-fōrd.
Billiton, bīl' i-tōn'.
Binghamton, bīng' ām-tōn.
Binue, bīn-ōō' ē.
Birkenhead, bērk' ēn-hēd.
Birmingham, bēr' mīng-ūm.
Biscay, bīs' kā.
Bismarck, bīs' mār'k.
Bissau, bīs-sōwn'.
Bloemfontein, blēm-fōn' tīn.

Bogotá, bō-gō-tā'.
Böhmewald, bē mēr-vālt.
Boisé, bōi-zā'.
Bokhara, bōk-ā' rā.
Bolan, bō' lan.
Bolivia, bō-līv' i-ā.
Bologna, bō-lōn' yā.
Boma, bō mā.
Bombay, bōm-bā'.
Boothia, bōō thī-ā.
Bordeaux, bōr-dō'.
Borealis, bō-rē-ā' līs.
Borgne, bōrn'.
Borneo, bōrn-ō.
Bosna-Serai, bōs-nā-sēr' i'.
Bosnia, bōz nī-ā.
Bosphorus, bōs-fō-rūs.
Bothnia, bōth' nī-ā.
Boyne, bōin.
Brahma, brā' mā.
Brahmaputra, brā-mā-pōō' trā.
Brazil, brā-zīl'.
Brazos, brā-zōs.
Bremen, brā' mēn.
Breslau, brēs' low.
Brest, brēst.
Brindisi, brēn' dē-sē.
Brisbane, brīs' bān.
Brooklyn, brook' līn.
Brulé, brū' lā.
Brunswick, brūnz' wīk.
Brussels, brūs' sēz.
Budapest, bōō dā-pēst.
Buddha, bōōd' dā.
Buenos Ayres, bōō nūs ā' rīz or Sp. bōō nūs i' rēs.
Bukharest, bū-kā-rēst'.
Bulgaria, bōōl-gā' rī-ā.
Burlington, būr' līng-tōn.
Burma, būr mā.
Butte, būt.

Cadillac, kād-il-lāk'.
Cagliari, kāl' yā-rē.
Caro, kār ō (U. S.); kī' rō (Egypt).
Calais, kāl' is (U. S.); kā-lā (France).
Calcutta, kāl-kūt' tā.
Caledonia, kāl-ē-dō nī-ā.
California, kāl-i-fōr-nī-ā.
Callao, kāl-lā' ō.
Cambodia, kām-bō' dē-ā.
Cambrian, kām' brī-an.
Cambridge, kām' brīj.
Campêche, kām-pā' chā.
Campos, kām' pōs.
Canada, kān' ā-dā.
Canadian, kā-nā' dē-an.
Canary, kā-nā' rī.
Candia, kān' dē-ā.
Cantabrian, kān-tā' brī-an.
Canton, kān' tōn (U. S.); kān-tōn' (China).
Cape Breton, brēt' ōn.
Caracas, kā-rā' kās.
Cardiff, kār' dīf.
Cardigan, kār' dē-gān.
Caribbean, kār-īb-bē' an.
Carmarthen, kār-mār' thēn.
Carolina, kā-rō' lī nā.
Carpathian, kār-pā' thī-an.
Carpentaria, kār-pēn-tā' rē-ā.
Cartagena, kār-tā-jē' nā.
Cascade, kās-kād'.
Caspian, kās' pī-an.
Cassava, kās' sā-vā.
Cassiquiare, kā-sē-kē-ā' rē.
Catoche, kā-tō shā.
Caucasian, kā-kā' shān.
Caucasus, kā-kā' sūs.
Cayenne, kā-yēn'.
Cayuga, kā-yōō' gā.
Celebes, sēl' ē-bēz.
Cenis, sē-nē'.
Cetinje, chā-tēn' yā.
Cévennes, sā-vēnn'.
Ceylon, sē-lōn'.
Châlon, shā-lōn'.
Chamouni, shā-mōō-nē'.
Champlain, shām-plān'.
Chandeleur, shān-dē-lōōr'.
Chapala, shā-pā' lā.

Charlotte, shār' lot.
Chatham, chāt' ām.
Chattahoochee, chāt-tā-hōō' chē.
Chattanooga, chāt-tā-nōō' gā.
Chautauqua, chā-tā' kwā.
Chelan, chē-lān'.
Chelsea, chēl' sē.
Chemnitz, kēm' nīts.
Cherbourg, shēr' būrg.
Cherokee, chēr-ō' kē.
Chesapeake, chēs' ā-pēk.
Chesuncook, chēs-sūn' kōōk.
Cheviot, chiv' ē-ūt.
Cheyenne, shē-ēn'.
Chicago, shē-kā' gō.
Chickasaw, chīk' ā-sā.
Chickasawha, chīk' ā-sā' wā.
Chihuahua, chē-wā' wā.
Chile, chē' lā.
Chillicothe, chīl-lī-kōth' ē.
Chimborazo, chim-bō-rā' zō.
Chinese, chī' nēz.
Chippewa, chip' pē-wā.
Choctaw, chōk' tā.
Christiania, kris-tē-ā' nē-ā.
Cimarron, sē-mā-rōn'.
Cinchona, sīn-kō' nā.
Cincinnati, sīn-sīn-nā' tī.
Clyde, klīd.
Cochin China, kō' chīn chī' nā.
Coeur d'Alene, kūr-dā-lān'.
Cohoes, kō-hōz'.
Colima, kō-lē' nīā.
Cologne, kō-lōn'.
Colombia, kō-lōm' bē-ā.
Colon, kō-lōn'.
Colorado, kōl-gā' rā-dō.
Como, kō' nō.
Conception, kōn-sēp' shūn.
Concord, kōnk' ūrd.
Connecticut, kōn-nēkt' i-kūt.
Constance, kōn' stāns.
Constantinople, kōn-stān' tī-nō' pl.
Coosa, kōō' sā.
Copenhagen, kō-pēn-hā' gēn.
Cordoba, kōr-dō' bā.
Corfu, kōr-fōō.
Corinth, kōr' inth.
Corpus Christi, kōr' pūs kris' tē.
Corrientes, kōr-rēn' tēs.
Corsica, kōr-sī' kā.
Costa Rica, kōs' tā rē' kā.
Cotopaxi, kō-tō-pāk' sē.
Covington, kūv' īng-tōn.
Cracow, krā' kō.
Crefeld, krā' fēlt.
Crevasse, krā-vās'.
Croydon, kroi' dōn.
Cuba, kū' bā.
Culloden, kūl-lō' dēn.
Cumbrian, kūm' brī-an.
Curaçao, kūr-ā-ō'.
Cuzco, kōōs' kō.
Cyprus, sī' prūs.
Czernowitz, chēr' nō-vīts.

Dahomey, dā-hō' mā.
Dakota, dā-kō' tā.
Dallas, dāl' ās.
Damascus, dā-mās' kūs.
Danzig, dānt' zīk.
Danube, dān' ūb.
Dardanelles, dār-dā-nēlz'.
Darfur, dār' fōōr.
Darien, dār' ēn.
Davenport, dāv' ēn-pōrt.
Debreczin, dē-brēt' sīn.
Decatur, dē-kā' tūr.
Dekkan, dēk' kān.
Delaware, dēl' ā-wār.
Delhi, India, dēl' lē.
Des Chutes, dā-shōōt'.
Des Moines, dē-moin'.
Des Plaines, dā-plān'.
Detroit, dē-troit'.
Dijon, dē-zhōn'.
Dnieper, nē' pēr.
Dniester, nēs' tēr.
Domica, dōm-ē-nē' kā.
Donegal, dōn-ē-gāl'.
Dovrefield, dō-vrē-fyēld'.
Drave, drāv.

Dresden, drēz' dēn.
Drogheda, drō' hē-dā.
Dubuque, dōō-būk'.
Duluth, dū-lōōth'.
Duncansby, dūn' kāns-bī.
Dundalk, dūn-dāk'.
Dundee, dūn-dē'.
Dunedin, dūn-ēd' in.
Dungeness, dūn-jē-nēs'.
Durango, dōō-rān' gō.
Dwina, dwē' nā.

Eaublicaire, ē-k-lār'.
Ebro, ē' brō.
Echidna, ē-kīd' nā.
Ecuador, ēk-wā-dōr'.
Edinburgh, ēd' in-būr-ō.
Egypt, ē' jīpt.
Egyptian, ē-jīp' shān.
Elba, ēl' bā.
Elberfeld, ēl' bēr-fēlt.
Elbruz, ēl-brōoz'.
Elbuz, ēl-bōōz'.
Eleuthera, ē-lū' thēr-ā.
Elgin, ēl' jīn.
Elmira, ēl-mī' rā.
El Paso, ēl' pā' sō.
Elyria, ē-līr' ē-ā.
Erne, ērn.
Erris, ēr' rīs.
Erz, ērts.
Escanaba, ēsk-ā-nā' bā.
Essequibo, ēs-sā-kē' bō.
Etna, ēt' nā.
Eubœa, ē-bē' ā.
Eucalyptus, ē-kā-līp' tūs.
Euphrates, ē-frā' tēz.
Eurasia, ē-rā' shī-ā.
European, ē-rō-pē' an.
Evansville, ēv' ānz-vīl.
Everest, ēv' ēr-ēst.
Eyre, ār.

Falkland, fāk' land.
Faribault, fār-ē-bō'.
Fezzan, fēz-zān'.
Fiji, fē' jē.
Findlay, fīnd' lā.
Finland, fīn' land.
Fiord, fyōrd.
Firth, fērth.
Flamborough, flām' būr-rō.
Floe, flō.
Florida, flōr' i-dā.
Fond du Lac, fōn-dū-lāk'.
Formosa, fōr-mō' sā.
Fort Wayne, wān.
Frankfurt, frānk' fōōrt.
Fraser, frā' zēr.
Fremonet, frē-mōnt'.
Fresno, frēs' nō.
Fuegian, fū-ē' jī-an.
Fujiyama, fōō-jī-ā' mā.

Galapagos, gāl-lāp' ā-gōs.
Galatz, gāl' lāts.
Galilee, gāl' i-lē.
Galveston, gāl' ves-tōn.
Galway, gāl' wā.
Ganges, gān' jēz.
Garonne, gār-rōnn'.
Gasconade, gās-kō-nād'.
Genesee, jēn-ē-sē'.
Geneva, jē-nē' vā.
Genoa, jēn' gā.
Georgia, jōr' jī-ā.
Geral, hā-rāl'.
Gettysburg, gēt' iz-būrg.
Ghats, gāts.
Ghent, gēnt.
Des Chutes, jī-brāl' tār.
Gila, hē' lā.
Girardeau, jē-rār-dō'.
Gironde, zhē-rōnd'.
Glasgow, glās' gō.
Gloucester, glōs' tēr.
Gloversville, glūv' ērz-vīl.
Gobi, gō' bē.
Gondar, gōn' dār.
Gottenborg, gōt' ēn-bōrg.
Gracias a Dios, grā' sē-ās-ā-dē' ōs.

Grampians, grām'pī-anz.
Granada, grā-nā'dā.
Gran Chaco, grān-chā'kō.
Grand Manan, grān-mān-ān'.
Grätz, grēts.
Greenwich, grēn'wich (U. S.);
grēn'ij (Eng.).
Grinnell, grīn-ēl'.
Guadalajara, gwā-dā-lā-lhā'rā.
Guadalquivir, gwā-dāl-kē-vēr'.
Guadalupe, gā-dā-loop' (U. S.);
gwā-dā-loo-pā (Spanish).
Guanaco, gwa-nā'kō.
Guanajuato, gwā-nā-lhwā'tō.
Guatemala, gwā-tā-mā'lā.
Guayaquil, gwi-ū-kēl'.
Guernsey, gēr'n-zē.
Guiana, gē-ā'nā.
Guinea, gūn-ē.
Guthrie, gūth-rē.
Guyandotte, gi-ān-dōt'.

Habana, hā-būn'ā.
Hagerstown, hā-gerz-town.
Hainan, hī-nān'.
Haiti, hā'ti.
Hakodate, hā-kō-dā'tē.
Halifax, hāl'ē-fāks.
Halle, hāl'le.
Hamite, hā'mit.
Hanoi, hā-nō'ē.
Hanover, hān-ō-ver.
Hatteras, hāt'ter-as.
Havana, hā-vān'ā.
Havre, hā-ver.
Havre de Grace, hāv'er dē grās.
Hawaii, hā-wī'ē.
Hebrides, hēb'rī-dēz.
Hekla, hēk'lā.
Helena, hēl'ē-nā.
Helgoland, hēl'gō-lānd.
Hennepin, hēn-lō-pēn.
Herat, her-āt'.
Himalaya, hīm-ā-lā-yā.
Hindukush, hīn-dōo-kōosh.
Hindustan, hīn-dō-stān'.
Hoangho, hō-āng-hō'.
Hoboken, hō-bō-kēn.
Holston, hōl'stōn.
Holyoke, hōl'yōk.
Hondo, hōn-dō.
Honduras, hōn-dōo-rās.
Hongkong, hōng-kōng'.
Honolulu, hō-nō-loo-loo.
Hoosac, hōo-sāk.
Housatonic, hōo-sā-tōn'ic.
Houston, hūs'tōn.
Hudson, hūd'sōn.
Hué, hōo-ā'.
Humboldt, hūm'bōlt.
Hungary, hūn'gā-rī.
Huron, hū'rōn.

Iberian, i-bē're-an.
Idaho, i-dā-hō.
Illimani, ēl-yē-mā'nē.
Illinois, il-lī-nōi' or -nōiz'.
Inagua, ē-nā'gwā.
India, in-dī-ā.
Indiana, in-dī-ān'ā.
Indianapolis, in-dī-ān-āp'q-lis.
Indes, in-dēz.
Indus, in-dūs.
Innsbruck, ins'brook.
Inverness, in-ver-nēss'.
Ionian, i-ō-ni-an.
Iowa, i-ō-wā.
Iquique, ē-kē-kā.
Iran, ē-rān'.
Irkutsk, ir-kōotsk'.
Iron-ton, i-rōn-tōn.
Ishpeming, ish-pēm-ing.
Isle Royale, ēl-rwā-yāl'.
Italian, i-tāl'yan.
Itasca, i-tās'kā.
Ithaca, ith'gā-kā.

Jalapa, hā-lā-pā.
Jamaica, jā-mā'kā.
Japan, jā-pān'.
Jassy, jā-sē.
Java, jā'vā.
Jersey, jēr'zī.
Joliet, jō-lē-ēt.
Joplin, jōp-lin.
Juan de Fuca, hōo-ān' dā fōo'kā.
Juan Fernandez, fēr-nān'dēth.
Juarez, hūwā'rēth.
Juneau, jū-nō'.
Jungfrau, yōōng'frow.
Juniata, jū-nī-āt'ā.
Jura, jū-rā.

Kābul, kā'būl.
Kadiak, kād-yāk'.
Kafir, kāf'ēr.
Kalahari, kā-lā-hā'rī.

Kama, kā'mā.
Kamchatka, kām-chāt'kā.
Kamerun, kā-mā-rōon'.
Kanawha, kā-nā'wā.
Kankakee, kān-kā-kē'.
Kara, kā'rā.
Karakoram, kā-rā-kō-rām.
Karpathian, kār-pā'thi-an.
Kashgar, kāsh-gār'.
Kashmir, kāsh-mēr'.
Kaskaskia, kās-kās-kī-ā.
Katahdin, kā-tā'din.
Katoomba, kā-tōom-bā.
Kauai, kow-i'ē.
Keeskeniet, kēch-kēm-āt'.
Kenia, kā-nē-ā.
Kennebec, kēn-ē-bēk'.
Kentucky, kēn-tūk'ī.
Keokuk, kē-ō-kūk.
Khaibar, kā-ē-bār.
Khartum, kār-tōom'.
Khelat, kēl-āt'.
Klingham, kīn-gān'.
Khiva, kē'vā.
Khyber, kī'bēr.
Kiakhta, kē-āk'tā.
Kilauea, kē-low-ā'ā.
Kilimanjaro, kīl'ē-mān-jā-rō'.
Killarney, kīl-ār-nī.
Kilmarnock, kīl-mār'nōk.
Kiolen, kyē'lēn.
Kirghiz, kīr-gēz'.
Kirin, kīr'in.
Kirkcaldy, kīr-kal'dī.
Kittery, kīt'er-ī.
Klamath, klā'math.
Klondike, klōn'dīk.
Knoxville, nōks'vil.
Koala, kō-ā-lā.
Kong, kōng.
Kongo, kōn-gō.
Königsberg, kē-nīgs-bērg.
Kordofan, kōr-dō-fān'.
Korea, kō-rē-ā.
Krawak, krā'kō.
Kronstadt, krōn'stāt.
Kuenlun, kwēn-lōon'.
Kyoto, kē-ō-tō.

Labrador, lāb-rā-dōr'.
Lachute, lā-shēn'.
La Crosse, lā-krōs'.
Ladoga, lād-ō-gā.
Ladrones, lā-drōnz'.
Lafayette, lā-fā-ēt'.
Lagoon, lā-goōn'.
La Guaira, lā-gwī-rā.
Lamoille, lā-mōil'.
Lancaster, lānk'as-tēr.
Landes, lōnd.
Lansing, lān'sing.
La Paz, lā-pāth'.
Lapland, lāp-lānd.
La Plata, lā-plā'tā.
Laporte, lā-pōrt'.
Laramie, lār-ā-mē.
Laredo, lā-rā-dō.
Lasalle, lās-sāl'.
Lassa, lās-sā.
Lassen, lās'sēn.
Las Vegas, lās-vā'gās.
Laurentian, lā-rēn'she-an.
Lausanne, lō-zān'.
Leadville, lēd'vil.
Leavenworth, lēv'en-wōrth.
Lebanon, lēb-ā-nōn.
Leghorn, lēg'hōrn.
Leicester, lēs'tēr.
Leipzig, lēp'zīk.
Leith, lēth.
Lemberg, lēm'bērg.
Lena, lē-nā.
Leon, lā-ōn' (Sp.).
Leone, lē-ō-nē.
Lexington, lēk'sing-tōn.
Liberia, lī-bē-rī-ā.
Libyan, līb'ē-an.
Liège, lē-āzh'.
Lima, lī'mā (U. S.); lē'mā (Peru).
Limerick, līm'er-ik'.
Limoges, lē-mōzh'.
Lipari, līp'ā-rē.
Lisbon, līz-bōn.
Lisburn, līs'būrn.
Lisle, lēl.
Liverpool, liv'er-pōol.
Llano Estacado, lyā'nō-ēs-tā-kā'-dō.
Loanda, lō-ān'dā.
Loch, lōk.
Loess, lēs.
Lofoden, lō-fō-dēn.
Logan, lō-gān.
Loire, lwār.
Lombok, lōm-bōk'.
Londonderry, lūn'dūn-dēr-ī.
Los Angeles, lōs-ān-gēl-ēs.

Lough Neagh, lōh nā'.
Louisiana, lōo-ē-zē-ā'nā.
Louisville, lōo'is- or lōo-i-vil.
Lourçeo Marques, lō-rēn'sō mār-kēs'.
Lucerne, lōo-sēr'n'.
Luray, lū-rā'.
Lurgan, lūr-gān.
Luxemburg, lūks'ēm-būrg.
Luzon, lōo-zōn'.
Lyon, lē-ōn.

Macao, mā-kow'.
Mackenzie, mā-kēn'zī.
Mackinac, māk'i-nā.
Macon, mā-kūn.
Madagascar, mād-ā-gās'kār.
Madeira, mā-dē-rā.
Madras, mā-drās'.
Madrid, mād-rīd (U. S.); mā-drid' (Spain).
Maelstrom, māl'strēm.
Magdalena, māg-dā-lā'nā.
Magdeburg, māg'dē-bōōrg.
Magellan, mā-jēl-ān.
Maine, mān.
Makassar, mā-kās'sār.
Malakka, mā-lāk'ā.
Malay, mā-lāy'.
Malaysia, mā-lā'shī-ā.
Malden, mōl-dēn.
Malheur, māl'hēr'.
Managua, mā-nā'gwā.
Manchester, mān-chēs-tēr.
Manchuria, mǎn-chōo'rē-ā.
Mandalay, mān-dā-lā.
Manila, mā-mī-lā.
Manistee, mān-is-tē'.
Manitoba, mān-i-tō-bā'.
Manitou, mān'ē-tōo.
Manitoulin, mān-ē-tōo'tin.
Manzanillo, mān-thā-nēl'yō.
Maori, mā-ō-rē.
Maracaibo, mā-rā-kī'bō.
Marathon, mā-rā-thōn.
Marcey, mār-sī.
Marias, mā-rī'gāz.
Marmora, mār-mō-rā.
Marseille, mār-sāl'.
Martinique, mār-tī-nēk'.
Mashonaland, mā-shō'nā-lānd.
Maskat, mās-kāt'.
Massachusetts, mās-g-chū'sēts.
Massaua, mās-sow-ā.
Massillon, mās'il-on.
Matabeleland, māt-gā-bēl'lānd.
Matagorda, māt-gōr'dā.
Matamoros, māt-g-mō-ros.
Matapan, mā-tā-pān' (Gr.).
Mauch Chunk, māuk-chūnk'.
Maui, mow-ē.
Maulmain, māl-mīn'.
Mauna Kea, mow-nā-kā'ā.
Mauna Loa, -lō-ā.
Mauritius, mā-rish'yūs.
Mazatlan, mā-sāt-lān'.
Mediterranean, mēd'i-tēr-rā-nē-an.
Mekong, mā-kōng'.
Melanesia, mēl-ān-ē-shī-ā.
Melbourne, mēl-būrn.
Memphremagog, mēm-frē-mā-gōg.
Memphis, mēm-fis.
Menai, mēn-ī.
Mendocino, mēn-dō-sē-nō.
Menomonee, mē-nōm'q-nē.
Meramec, mēr-ā-mēk.
Merida, mēr'ī-dā.
Meriden, mēr'ī-dēn.
Merrimac, mēr'ī-māk.
Messina, mēs-sē-nā.
Metz, mēts.
Mexico, mēks'ī-kō.
Miami, mī-ām-ī.
Michigan, mīsh'ī-gān.
Micronesia, mī-krō-nē-shī-ā.
Milan, mī-lān' or mī-lān'.
Mille Lacs, mēl-lāk'.
Milo, mē'lō (Greece).
Milwaukee, mīl-wā-kē.
Minch, mīnch.
Mindanao, mēn-dā-nā'ō.
Minneapolis, mīn-ē-āp'ō-lis.
Minnehaha, mīn-ē-hā'hā.
Minnesota, mīn-ē-sō-tā.
Mississippi, mīs-is-īp'ī.
Missoula, mīz-sō-lā.
Missouri, mīs-sō'rī.
Mitylene, mīt-ē-lē-nē.
Mobile, mō-bēl'.
Mohammed, mō-hām-mēd.
Mohave, mō-hā'vā.
Mohawk, mō'hāk.
Molokai, mō-lō-kī'.
Moluccas, mō-lūk'kag.

Mombaza, mōm-bās'ā.
Monaco, mōn-ā-kō.
Monastir, mōn-as-tēr'.
Moneton, mūn'k-tōn.
Mongolia, mōn-gō-lī-ā.
Monongahela, mōn-nōn-gā-hē-lā.
Monrovia, mōn-rō-vī-ā.
Montana, mōn-tā-nā.
Montauk, mōu-tāk'.
Mont Blanc, mōn blōn' or mount blānk.
Mont Cenis, mōn'sē-nē' or mount.
Montenegro, mōn-tā-nā-grō.
Monterey, mōn-tēr-ā'.
Montevideo, mōn-tē-vid'ē-ō.
Montgomery, mōnt-gūm'ēr-ī.
Monticello, mōn-tē-sēl'lō.
Montpelier, mōnt-pē-lī-ēr.
Montreal, mōnt-rē-āl'.
Moraine, mō-rān'.
Moravia, mō-rā-vī-ā.
Moray, mūr-ā.
Morelia, mō-rā-lē-ā.
Morocco, mō-rōk'ō.
Moscow, mōs'kō.
Mount Diablo, dē-ā-blō.
Mount Lyell, lī-ēl'.
Mount St. Elias, ē-lī-as.
Mount Tyndall, tīn'dāl'.
Mozambique, mō-zām-bēk'.
Mukden, mōok-dēn'.
Mull, mūl.
Munich, mū'nīk.
Murray, mūr-rā.
Muskatine, mūs-kā-tēn'.
Muskegon, mūs-kē-gōn.

Namur, nā'mūr.
Nanling, nān'ling.
Nantes, nānts.
Nanticoke, nān'tī-cōk.
Nantucket, nān-tūk'ēt.
Naples, nā-plz.
Narragansett, nār-rā-gān'sēt.
Nashua, nāsh'ū-ā.
Nassau, nās'ā.
Natchez, nā'chēz.
Navajo, nā'vā-hō.
Naxos, nāk'sōs.
Nebraska, nē-brās'kā.
Neches, nēch'ēz.
Negritos, nē-grī-tōz.
Nepal, nā-pāl'.
Netherlands, nēth'ēr-lāndz.
Neuse, nūs.
Nevada, nē-vā-dā.
Newark, nū-ark.
Newfoundland, nū-fōnd-land.
New Hampshire, -hāmp'shīr.
New Orleans, -ōr-lē-āuz.
Newport, nū-pōrt.
New Zealand, -zē-lānd.
Niagara, nī-āg-ā-rā.
Nicaragua, nē-kā-rā'gwā.
Nice, nēs.
Niger, nī-jēr.
Nimes, nēm.
Ningpo, nīng-pō'.
Niobrara, nī-ō-brā-rā.
Nizhni Novgorod, nīzh'nī nōv'gō-rōd.
Norfolk, nōr'fok.
Norristown, nōr'is-tōwn.
Norwegian, nōr-wē-jī-an.
Norwich, nōr'wich (U. S.), nōr'rij (Eng.).
Nottingham, nōt'ing-am.
Nova Scotia, nō'vā skō'shī-ā.
Nova Zembla, nō'vā zēm'blā.
Nubia, nū-bī-ā.
Nueces, nwā-sēs.
Nuremberg, nū-rēm-bērg.
Nyanza, nī-ān'zā.
Nyassa, nē-ās-sā.

Oahu, ō-ā'hōo.
Oakland, ōk-lānd.
Oasis, ō-ās-is.
Oaxaca, wā-hā'kā.
Ob, ōb.
Ocmulgee, ōk-mūl'gē.
Oder, ō-dēr.
Odessa, ō-dēs-sā.
Ogden, ōg'dēn.
Ogechee, ō-gē-chē.
Okanogan, ō-kān'ō-gān.
Okechohee, ō-kē-chō-bē.
Okefinokee, ō-kē-fī-nō-kē.
Okhotsk, ō-kōtsk'.
Oklohoma, ōk-lā-hō-mā.
Oldham, ōld'am.
Olympia, ō-līm'pī-ā.
Olympus, ō-līm-pūs.
Omaha, ō-mā-hā.
Oman, ō-mān'.
Omsk, ōmsk.
Oneida, ō-nē-gā.

Oneida, ō-nī-dā.
Ontario, ōn-tā-rī-ō.
Oregon, ōr'ē-gōn.
Orinoco, ō-rī-nō'kō.
Orizaba, ō-rē-thā'bā.
Orkney, ōrk-nē.
Orleans, ōr-lā-ōns' (Fr.).
Ornithorynchus, ōr-nī-thō-rīn'kūs.
Osage, ō-sāj'.
Oshkosh, ōsh'kōsh.
Oswego, ōs-wē-gō.
Otranto, ō-trān-tō.
Ottawa, ōt-tā-wā.
Ottumwa, ōt-tūm'wā.
Ouachita, wōsh'ī-tā.
Ouse, ōōz.
Owyhee, ō-wī'hē.
Ozark, ō-zārk'.

Pacaraima, pā-kā-rī'mā.
Pachuca, pā-chōo'kā.
Pacific, pā-sīf'ik.
Paducah, pā-dū-kā.
Pagan, pā-gān.
Pago, pā-gō.
Pagoda, pā-gō-dā.
Paisley, pāz-lī.
Palambang, pā-lēm-bāng'.
Palermo, pā-lēr'mō.
Palestine, pāl'sēs-tīn.
Pamir, pā-mēr'.
Pamlico, pām-lī-kō.
Pampas, pām-pās.
Panama, pān-pā-mā'.
Papua, pāp'ō-ā.
Pará, pā-rā'.
Paraguay, pā-rā-gwī'.
Paramaribo, pār-ā-mār'ī-bō.
Parana, pā-rā-nā'.
Paris, pār'is.
Parma, pār-mā.
Parsee, pār-sē.
Parthenon, pār-thē-nōn.
Pascagoula, pās-kā-gōo-lā.
Passaic, pās-sā-ik.
Passamaquoddy, pās-g-mā-kwōd'ī.
Patagonia, pāt-ā-gō-nī-ā.
Paterson, pāt'ēr-sōn.
Patras, pā-trās'.
Pawtucket, pā-tūk'ēt.
Pecos, pā-kōs.
Pedee, pē-dē.
Pekin, pē-kīn'.
Peling, pē-līng'.
Pennine, pēn-nīn.
Pennsylvania, pēn-sil-vā-nī-ā.
Penobscot, pē-nōb'scōt.
Pensacola, pēn-sā-kō-lā.
Pentland, pēnt-lānd.
Peoria, pē-ō-rī-ā.
Pepin, pē-pīn.
Fernambuco, pēr-nām-bōo'kō.
Persia, pēr'shī-ā.
Perth, pērth.
Peru, pē-rōo'.
Phenix, fē-nīks.
Philadelphia, fil-ā-dēl'fī-ā.
Philae, fī-lē.
Philippine, fil'ip-in.
Phipps, fil'ip-ōp'ō-lis.
Piedmont, pēd-mōnt.
Pierre, pēr.
Pietermaritzburg, pē-tēr-mār'its-būrg.
Pike, pīk.
Pileomayo, pīl-kō-mī'ō.
Pilsen, pīl'sēn.
Pindus, pīn'dūs.
Pinos, pē-nōs.
Piraeus, pī-rē-ūs.
Pittsburg, pīt'sbūrg.
Plata, plā-tā.
Platten See, plāt'tēn zā'.
Plymouth, plīm'ūth.
Pnom Penh, p'nūm-pēn'.
Polyp, pōl'ip.
Pomona, pō-nō-nā.
Pompeii, pōm-pī-yē.
Pontchartrain, pōnt-char-trān'.
Popocatepetl, pō-pō-kāt-ā-pā-tl.
Port au Prince, pōrt-ō-prīns'.
Port Said, -sā-ēd'.
Portsmouth, pōrts' mūth.
Portugal, pōrt-gū-gal.
Portuguese, pōrt-gū-gēz.
Potomac, pō-tō-māk.
Potosi, pō-tō'sī.
Poughkeepsie, pō-kīp'sī.
Prague, prāg.
Pressburg, prēs'boorg.
Pretoria, prē-tōr'ē-ā.
Pribilof, prē-bē-lōv'.
Providence, prōv'ī-dēns.
Prussia, prīsh'yā.
Pruth, prōoth.
Ptarmigan, tār-mī-gān.
Puebla, pwēb-lā.

Pueblo, pwēb'lo.
Puerto Rico, pwēr'tō rē'kō.
Puget, pū'jet.
Puno, pōō'nō.
Pyrenees, pīr'ē-nēz.

Quagga, kwāg'gā.
Quebec, kwē-bēk'.
Querétaro, kā-rā tā-rō.
Quincy, kwīn'zī.
Quito, kē'tō.

Racine, rā-sēn'.
Rainier, rā'nēr.
Raleigh, rā'la.
Rangoon, rān-gōōn'.
Rappabannock, rāp-ā-hān'qk.
Ravenna, rā-vēn'ā.
Reading, rēd'ing.
Rennes, rēnū.
Rhems, rēmz.
Rhine, rīn.
Rhone, rōn.
Riga, rī'gā (U. S.); rē'gā (Rus.).
Rio Grande, rē'ō grān'dā.
Rio de Janeiro, jā-nā'rō.
Rio Negro, nā'grō.
Rio Virgen, -vēr'hēn.
Roanoke, rō-ā-nōk'.
Rochelle, rō-shēl'.
Rochester, rōch'ēs-tēr.
Romano, rō-mā'nō.
Rumanzof, rō-mān'tsōf.
Rosario, rō-sā'rē-ō.
Rotterdam, rōt'er-dām.
Roubaix, rōō'bā'.
Rouen, rōō'n'.
Roumelia, rōō-mē'lē-ā.
Roumania, rōō-mā'nī-ā.
Russia, rūsh'ā.
Rustebuk, rōōst-chōōk'.

Saco, sā'kō.
Sacramento, sāk-rā-mēn'tō.
Saginaw, sāg'ī-nā.
Sahara, sā-hā'ra.
Saigon, sā'ē-gōn.
Saint Albans, sānt'al'bānz.
Saint Augustine, -ā gūs-tēn.
Saint Bernard, -bēr-nārd'.
Saint Clair, -klār'.
Saint Croix, -kroi'.
Saint Gotthard, -gō-tārd'.
Saint Helena, sēnt'hē-lē-nā.
Saint Lawrence, sānt'lā'rēns.
Saint Louis, -lōō'is or -lōō'ī.
Saint Petersburg, -pē'tēr-z-būrg.
Saint Roque, -rōk'.
Saint Sophia, -sō-fē-ā.
Sakhalin, sā-khā-lēn'.
Salem, sā'lem.
Salford, sā'l'fōrd.
Salinas, sā-lē-nās.
Salisbury, sālz'bēr-ī.
Saloniki, sā-lō-nē-kē.
Saltillo, sā-l'tēl'yō.
Salvador, sā-l-vā-dōr'.

Salzburg, sāltz'bōōrg.
Samarkand, sām-ār-kānd'.
Samoa, sā-mō-ā.
San Antonio, sām-ān-tō'nī-ō.
San Bernardino, -bēr-nār-dē-nō.
San Cristobal, -krēs-tō'bāl.
Sandhurst, sād'hurst.
San Diego, sām-dē-ā-gō.
Sandusky, sām-dūs'kī.
San Francisco, -frān-sis'kō.
Saugamon, sām-gā-mōn.
Sangay, sām-gī'.
Sangre de Cristo, sām-grā dā krēs-tō.
San Joaquin, sām-hō-ā-kēn'.
San José, -hō-sā'.
San Juan, -hōō-ān'.
San Lucas, -lōō-kās.
San Luis, -lōō-ēs'.
San Marino, -mā-rē-nō.
San Pablo, -pā'blō.
Santa Barbara, sām'tā-bār'bā-rā.
Santa Fé, -fā.
Santee, sām'tē'.
Santiago, sām-tē-ā'gō.
Santo Domingo, sām'tō dō-mēn'gō.
Sãone, sōn.
Saratoga, sār-ā-tō-gā.
Sarawak, sār-rā-wāk'.
Sardinia, sār-dīn'ī-ā.
Sark, sār.k.
Saskatchewan, sās-kāch'ē-wān.
Sault Sainte Marie, sōō sēnt mā'rī.
Savaii, sā-vī-ē.
Savannah, sā-vān'ā.
Save, sāv.
Scandinavia, skān-dī-nā'vī-ā.
Scheneectady, skē-nēk'tā-dē.
Schwarzwald, shvārtz'vālt.
Scilly, sil'ī.
Scotland, skōt'land.
Scranton, skrān'tōn.
Seattle, sē-āt'l.
Sedalia, sē-dā-lī-ā.
Seine, sām.
Seminole, sēm'ī-nōl.
Semite, sēm'īt.
Semitic, sēm'īt'ic.
Seneca, sēm'ē-kā.
Senegal, sēm'ē-gāl'.
Senegambia, sēm'ē-gām'bī-ā.
Seoul, sē-ōōl'.
Serra do Mar, sār'rā-dō-mār'.
Servia, sēr'vī-ā.
Severn, sēr'vēr.
Sevier, sē-vēr'.
Shamokin, shā-mō'kīn.
Shanghai, shāng-hā'ī.
Shannon, shān'nōn.
Shasta, shās'tā.
Sheboygan, shē-boi'gān.
Sheffield, shēf'fēld.
Shenandoah, shēn-ān-dō'ā.
Shetland, shēt'land.
Shoshone, shō-shō'nē.
Shreveport, shrēv'pōrt.
Siam, si-ām'.

Siberia, sī-bē'rī-ā.
Sicily, sīs'ī-lī.
Sierra Madre, sē-ēr'ā-mā-drā.
Singapore, sīn-gā-pōr'.
Sioux, sōō.
Sitka, sit'kā.
Sligo, slī'gō.
Smyrna, smēr'nā.
Snowdon, snō'dōn.
Sofia, sō-fē-ā.
Sogne, sōn.
Sokoto, sō-kō-tō'.
Solway, sōl'wā.
Somali, sō-mā'lē.
Somerville, sūm'er-vīl.
Souris, sōō-rē'.
Spartivento, spār-tē-vēn'tō.
Spokane, spō-kān'.
Stabiae, stā'bī-ē.
Staffa, stāf'ā.
Stanovoi, stā-nō-vōi'.
Stettin, stēt-tēn'.
Steubenville, stū'bēn-vīl.
Stirling, stēr'ling.
Stockholm, stōk'hōlm.
Strangford, strāng'fōrd.
Strassburg, strāz'būrg.
Streator, strē'tor.
Stuttgart, stōōt'gärt.
Suakin, swā'kīn.
Sucre, sōō'krē.
Sudan, sōō-dān'.
Sudanese, sōō-dān'ēz'.
Suez, sōō-ēz'.
Suisun, sōō-ē-sōōn'.
Suliman, sōō-lē-mān'.
Sumatra, sōō-mā'trā.
Sunda, sūn'dā.
Sunderland, sūn'dēr-land.
Susquehanna, sūs-kwē-hān'ā.
Suwanee, sū-wā'nē.
Swansea, swōn'sē.
Sweden, swē'dēn.
Switzerland, swīt-zēr-land.
Sydney, sid'nī.
Syra, sē'rā.
Syracuse, sir'ā-kūs.
Syria, sir'ī-ā.
Szegedin, sēg-ēd-ēn'.

Tabriz, tā-brēz'.
Tacoma, tā-kō'mā.
Tagus, tā'gūs.
Tahoe, tā'hō'.
Tahlequah, tā'lē-kwā.
Tallabessee, tāl-ā-hās'ē.
Tampa, tām'pā.
Tampico, tām-pē'kō.
Tananarivo, tā-nā'nā-rē-vō.
Tanganyika, tān-gān-yē'kā.
Taranto, tā'rān-tō.
Tarim, tā-rēm'.
Tashkend, tāsh-kēnt'.
Tasmania, tāz-mā'nī-ā.
Taunton, tān'tōn.
Taurus, tā'rūs.
Tchad, chād.

Tegucigalpa, tā-gōō-sē-gāl'pā.
Teherān, tē-hrān'.
Tehuantepec, tā-wān-tā-pēk'.
Temesvar, tēm-ēsh-vār'.
Tennessee, tēm-ngs-sē'.
Terre Haute, tēr-ē-hōt'.
Texas, tēks'ās.
Thames, thāmiz (U. S.); tēmz (Eng.).
Theiss, tīs.
Thianshan, tē-ān'shān.
Tiber, tī'bēr.
Tibet, tī-bēt' or tīb'ēt.
Tibetan, tīb'ē-tān.
Tientsin, tē-ēn'tsēn.
Tierra del Fuego, tē-ēr'rā-dēl-fwā'gō.
Tiflis, tīf-lēs'.
Tigris, tī'grīs.
Timbuktu, tīm-bōōk'tōō.
Timor, tē-mōr'.
Titicaca, tīt-ē-kā'kā.
Tocantins, tō-kān-tēns'.
Tokyo, tō-kē-ō.
Toledo, tō-lē-dō.
Tolima, tō-lē-mā.
Tombigbee, tōm-bīg'bē.
Tonga, tōng'ā.
Topeka, tō-pē'kā.
Toronto, tō-rōn'tō.
Torrens, tōr-rēnz.
Toulon, tōō'lōn.
Toulouse, tōō'lōōz'.
Transvaal, trāns-vāl'.
Triest, trē-ēt'.
Trinidad, trīn'ī-dād'.
Tripoli, trīp'ō-lī.
Tsetse, tsēt'sē.
Tucson, tū-sōn'.
Tulare, tōō-lā'rē.
Tunis, tū'nīs.
Turin, tūr'īn.
Turkistan, tōōr-kīs-tān'.

Ucayali, ūō-kī-ā'lē.
Uinta, ū-īn'tā.
Ujiji, ūō-jē-jē.
Upolu, ūō-pō-lōō'.
Ural, ū'rāl.
Uruguay, ūō-rōō-gwī'.
Uspallata, ūōs-pāl-yā'tā.
Utah, ū'tā or ū'tā.
Utica, ū'tī-kā.

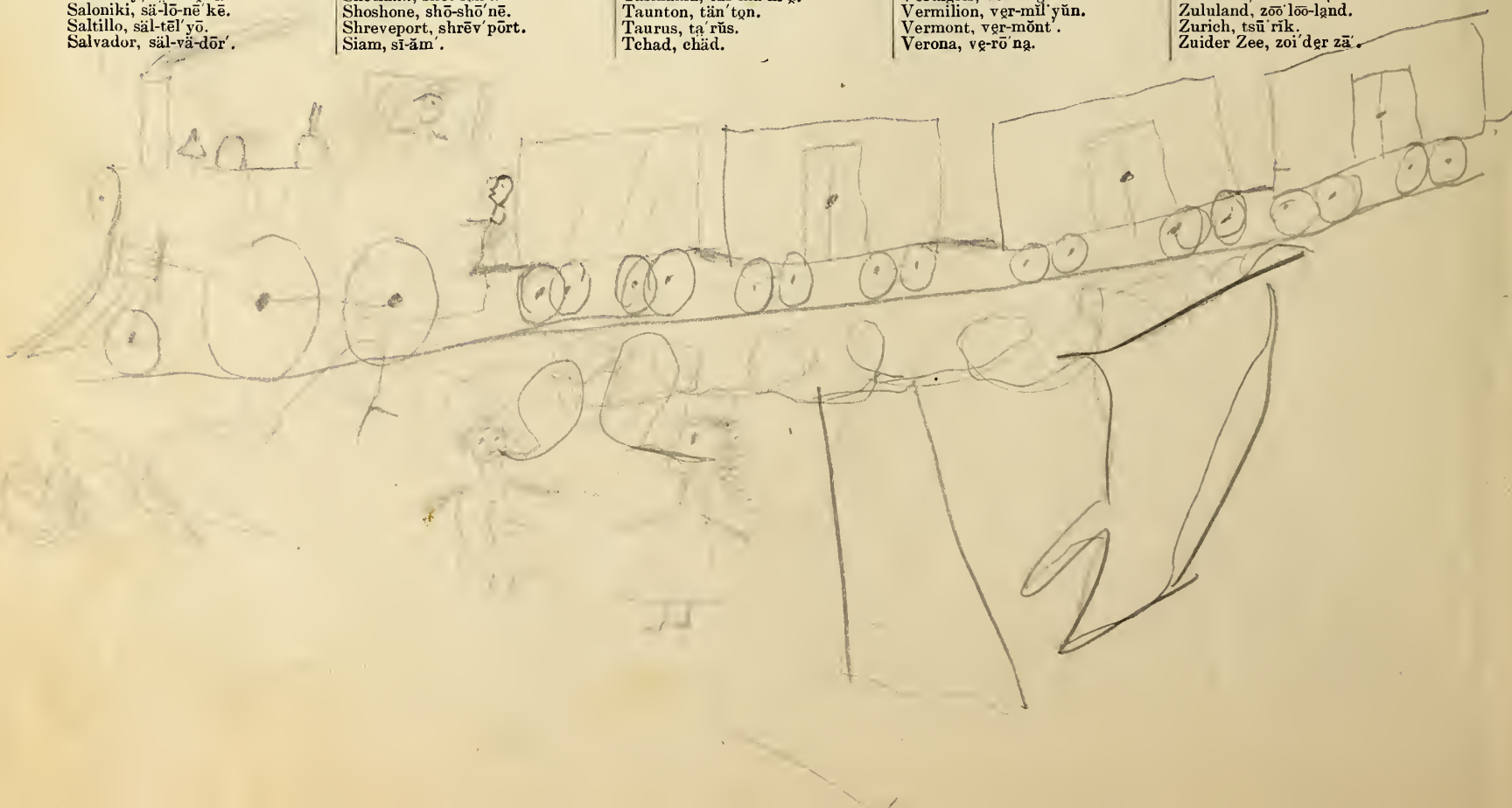
Valdai, vāl'dī.
Valencia, vā-lēn'sbī-ā.
Valparaiso, vāl-pā-rī-sō.
Vancouver, vān-kōō'vēr.
Vega, vē'gā.
Venezuela, vēn-ē-zwē'lā.
Venice, vēn'īs.
Vera Cruz, vā'rā krōōs'.
Verde, vērd.
Verdigris, vēr'dī-grēs.
Vermilion, vēr-mīl'yūn.
Vermont, vēr-mōnt'.
Verona, vē-rō-nā.

Vesuvius, vē-sū'vī-ūs.
Verkoyansk, vēr-kō-yānsk'.
Vienna, vī-ēn'ā (U. S.); vē-ēn'ā (Austria).
Vincennes, vīn-sēnz'.
Virginia, vēr-jīn'ī-ā.
Vistula, vīs'tū-lā.
Viti Levu, vē'tē-lā'vōō.
Vladivostok, vlā-dē-vōs-tōk'.
Volga, vōl'gā.
Vosges, vōzh.

Wabash, wā'bāsh.
Wachusett, wā-chū'sēt.
Waco, wā'kō.
Wadai, wā'dī.
Wales, wālz.
Warsaw, wār'sā.
Wasatch, wā'sāch.
Waterloo, wā-tēr-lōō'.
Welland, wēl'ānd.
Wellington, wēl'īng-tōn.
Wenner, vā'nēr.
Westminster, wēst'mīn-stēr.
Wetter, vēt'tēr.
Wheeling, hwēl'īng.
Wichita, wīch'ī-tā.
Wilkesbarre, wīlks'bār-ī.
Willamette, wīl-ā-mēt.
Wilmington, wīl'mīng-tōn.
Winnebago, wīn-ē-bā'gō.
Winnemucca, wīn-ē-mūkk'ā.
Winnepesaukee, wīn-ē-pē-sā'kē.
Winnipeg, wīn'ī-pēg.
Winnipegosis, wīn'ī-pē-gō'sis.
Winona, wī-nō-nā.
Winoski, wī-nōōs'kī.
Wisconsin, wīs-kōn'sīn.
Woonsocket, wōōn-sōk'ēt.
Worcester, wōōs'tēr.
Wyoming, wī-ō'mīng.

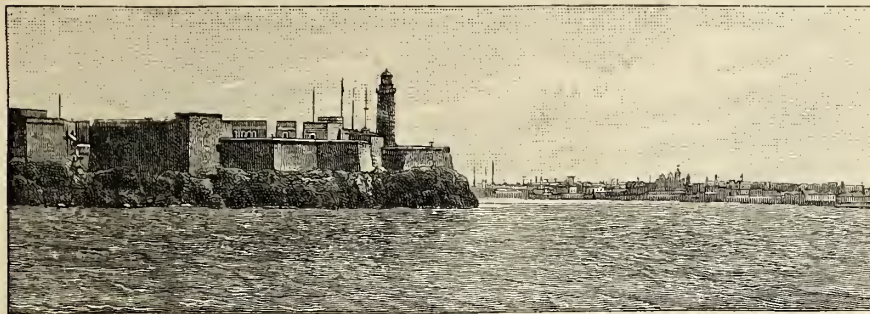
Yablonoī, yā-blō-nōi'.
Yadkin, yād'kīn.
Yakima, yāk'ī-mā.
Yakutsk, yā-kōōtsk'.
Yanetze, yāng'tsē.
Yarkhand, yār-kānd'.
Yazoo, yā-zōō'.
Yenisei, yēn-ē-sā'ē.
Yesso, yēs'sō.
Yokohama, yō-kō-hā'mā.
Yonkers, yōnk'ērs.
Yosemite, yō-sēm'ī-tē.
Yucatan, yōō-kā-tān'.
Yukon, yōō'kōn.
Yuma, yōō'mā.

Zacatecas, zāk-ā-tā'kās.
Zambezi, zām-bā-zē.
Zambezia, zām-bē-zē-ā.
Zanesville, zānz'vīl.
Zante, zān'tā.
Zanzibar, zān'zī-bār.
Zululand, zōō'lōō-land.
Zurich, tsū'rik.
Zuider Zee, zoi'dēr-zā.



CUBA, PUERTO RICO,¹ HAWAII, PHILIPPINES, GUAM.

THE long chains of islands that separate the Atlantic ocean from the gulf of Mexico and the Caribbean sea are called the *West Indies*. These islands are in several groups, the most



Morro Castle; Entrance to Havana Harbor.

northern being the *Bahamas*; next in order follow the great islands of Cuba, Haiti, Jamaica and Puerto Rico,¹ with their border islets, together forming the *Greater Antilles*; lastly, many smaller islands, known as the *Lesser Antilles*,² extend from Puerto Rico almost to the coast of South America.

At the close of the recent war with Spain, Puerto Rico (with its border isles) was ceded to the United States; Spain also gave up all claim to Cuba and its border isles, and they are now under the protection of our country.

CUBA. Cuba, the "Queen of the Antilles," is the largest island of the West Indies. In shape it looks like a cornucopia. Its length is about 750 miles. The island is about 130 miles from the mainland of Florida, and slightly less from Yucatan. The area is 43,000 square miles—almost as large as Pennsylvania, or nearly nine times as large as Connecticut. Cuba may be roughly divided into three regions—mountainous in the east, hilly in the middle, level in the west or southwest. The highest mountain range, known as the *Sierra Maestra*, follows the southeast coast. Its general crest is about 4000 feet

¹ The name *Porto Rico* is often used. It is a corrupt form of the Spanish name *Puerto Rico*, or *rich port*. The *United States Board on Geographic Names* has ruled that the correct form is *Puerto Rico*. For pronunciation of names see page 6.

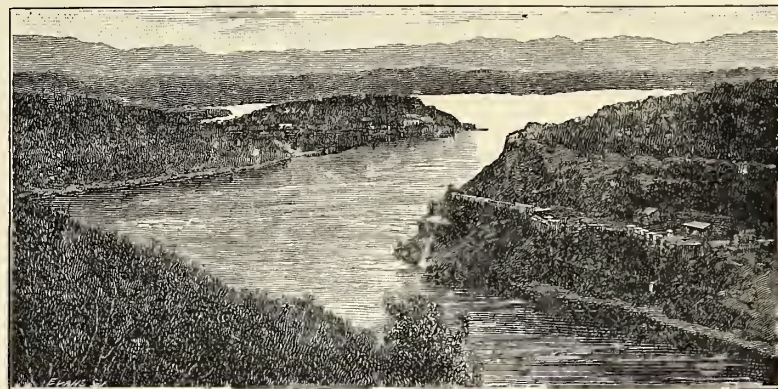
² Many of the Lesser Antilles belong to the British nation, and that nation has *officially* (for purposes of government) divided the islands into the *Leeward islands*—from the Virgin isles to Dominica; the *Windward islands*—southward to Grenada; with Barbados as a third separate colony, and with Trinidad and Tobago as a fourth colony.

Sailors often refer to the outer chain of islands in the Lesser Antilles, fronting the Atlantic and in the direct path of the trade winds, as the *Windward islands*; they also apply the name *Leeward* to the islands along the coast of Venezuela. This use of the names should not be confused with the official division into colonies, as shown on the map.

high, with a few peaks about twice as high. Guantánamo bay is near the eastern end of this range; Santiago, before which our soldiers fought with such courage, is at the southern base of the range. Towards the west the highland is rugged, with hill ranges and deep valleys, but not so high as the Sierra Maestra. The middle hill district is famous for its beauty. Broad fertile fields occupy the greater portion of southwest Cuba, and form the best agricultural region of the island. The rivers are numerous but small.

The coast of Cuba is largely fringed with coral reefs, rocks and sand bars, making navigation difficult and dangerous; but there are also many excellent harbors, ranking among the finest in the world. Of these Havana is the best known.

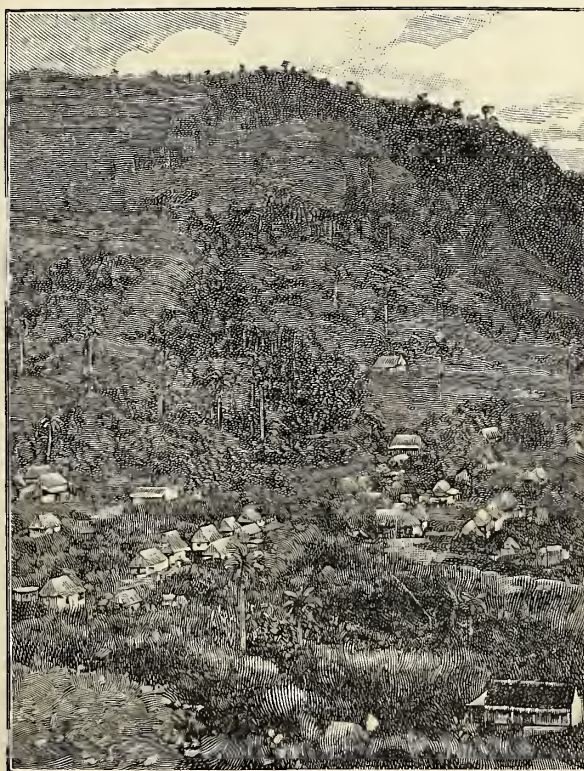
Cuba is in the torrid zone, and its lowlands have hot or warm weather almost all the year. As in other parts of this



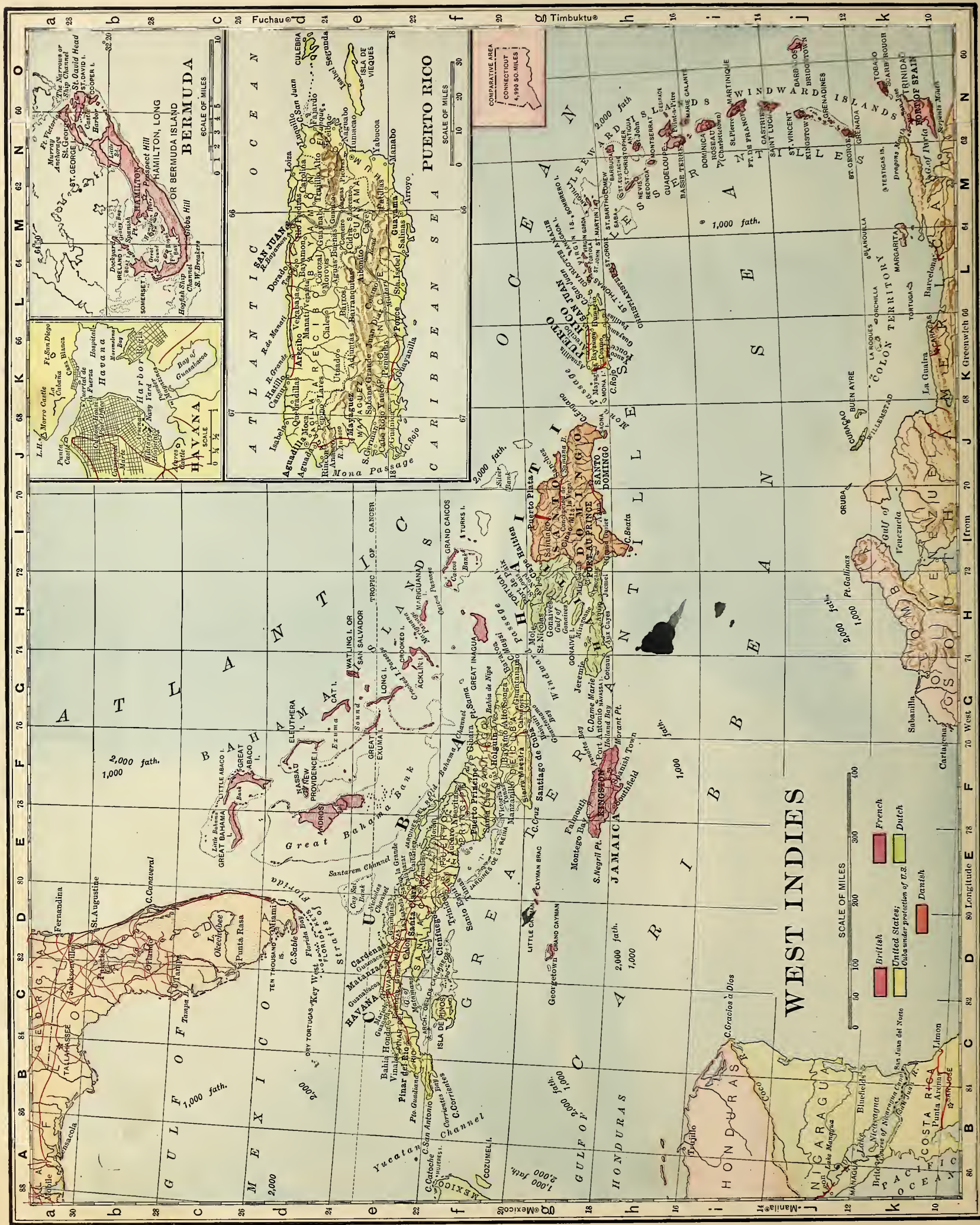
Entrance to Santiago Harbor.

zone, the rainy season comes during the hottest part of the year, here lasting from May to November. The lowlands are then very unhealthy, being subject to the scourges of yellow and malarial fevers. Long cool nights and sea breezes help to temper this torrid climate, while the hilly region affords refuge from the hot and unhealthy coast lands. Among the hills and mountains in nearly all parts of the West Indies a fairly mild climate is found at the height of 2000 feet and upwards. "Winter," or the dry season, is the pleasant season in these islands.

With high temperature and abundant rainfall, vegetation in Cuba is luxuriant. The hill and mountain slopes are a tangle of shrubs and scrubby trees, with forests of lofty mahogany and ebony trees in the southeast. Roadways in this island are very poor, being often overgrown with thicket. Few people live in the inland portions of the hilly or moun-



Cuban Village near Santiago.



tainous districts ; there vegetation runs wild. Along the coasts of these districts, however, and even on some of the higher slopes, fruits and coffee abound. The latter thrives best on the hillsides.

The valleys of the middle hilly region, in the Santa Clara province, are very fertile, but during the war for Cuban freedom the plantations were mostly ruined, crops were destroyed and buildings burned.

Now that Cuba is free from Spain, a few years will witness the growth of new plantations in this fertile province.

Richest of all are the plains or *savannahs* of the west and southwest portions of the island. Here are found most of the



Homes in a Cuban Village.

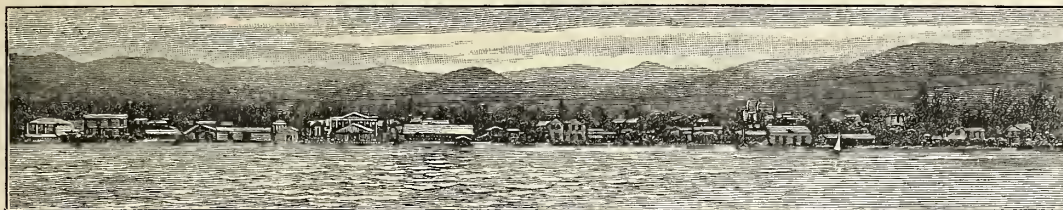
fully one third of the people are Negroes ; the other two thirds include the white people, the mixed races and several thousand coolies, or laborers from China and the East Indies.

The people are gathered chiefly in the coast cities and the fertile lands of the western half of the island. In 1894 the population was 1,632,000, but the present number is not known.

Havana is the capital and largest city of Cuba. It contains one eighth of the people of the island. This is also the railroad center, as well as the chief port. Havana owes its growth largely to its fine harbor, its nearness to the rich plantations of

western Cuba, its nearness to the United States, and the fact that it has long been the capital of the island. The principal exports are sugar, tobacco and coffee. Most of the exports go to the United States.

Santiago is the second largest city in Cuba, and is the leading port of the eastern province. With the destruction of the Spanish fleet when trying to escape from Santiago bay, and with the sur-



Hill District seen from Mayaguez Harbor, Puerto Rico.

great sugar and tobacco plantations for which Cuba is famous. Fruits also grow in abundance in all parts of the islands.

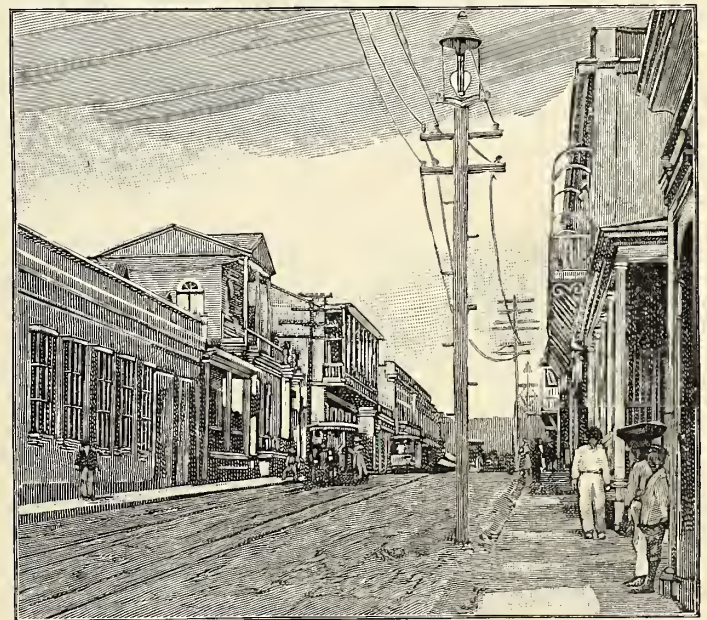
When white men first went to the West Indies, they found there none of the great mammals so common elsewhere in



Cutting Sugar Cane, Puerto Rico.

America. Of course the islands are now well stocked with domestic animals. Birds of beautiful plumage are plentiful. Fish and turtles abound and are valuable food products.

Iron and copper are valuable mineral products of Cuba. The early explorers found in Cuba many tribes of peaceful Indians, numbering in all perhaps a million people. During the first hundred years of Spanish rule this vast population disappeared. Other Indians were imported only to die in slavery. After a time large numbers of African Negroes were taken to Cuba as slaves. No slavery no longer exists in the island, but

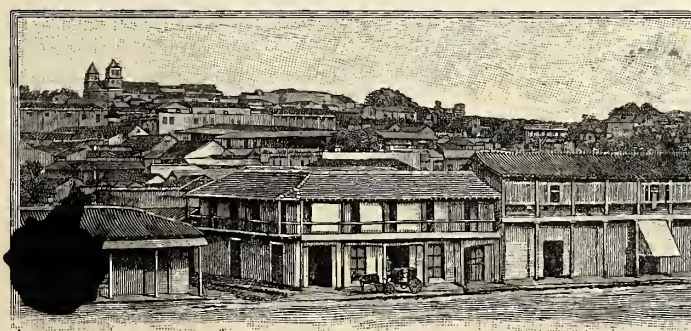


Street Scene, Mayaguez, Puerto Rico.

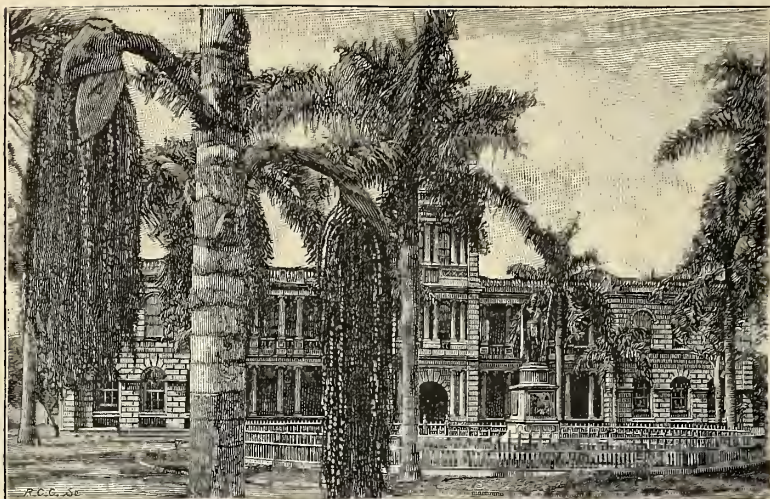
render of Santiago itself, the power of Spain in the New World was broken. The other principal ports of Cuba are: Cienfuegos, on the south coast; Matanzas and Cardenas, east of Havana. Puerto Principe and Holguin rank among the large cities.

PUERTO RICO. Puerto Rico has in general the shape of a rectangle. It is about 90 miles in length by 36 in breadth, and is about three fourths as large as Connecticut.

This island has no high mountains, — its loftiest peak being only



Santiago, Cuba.



Government Building, Honolulu.

three fourths of a mile in height. For the most part the inland regions are hilly, with wooded ridges running east and west, sending small rivers to the seacoast on all sides. A broad

Rico are very fertile and contain most of the cities and towns. By far the most valuable product is coffee, which thrives on the gentle hillsides. Next in value is sugar; molasses and tobacco are also valuable exports. Among the chief imports are cloth and metal

wares. The small island of Puerto Rico contains half as many people as Cuba. This fact shows that the former island is the better cultivated. Out of a total of between 800,000 and 900,000 people, fully one third are Negroes, mostly descendants of former slaves.

San Juan is the chief city of Puerto Rico, though not the

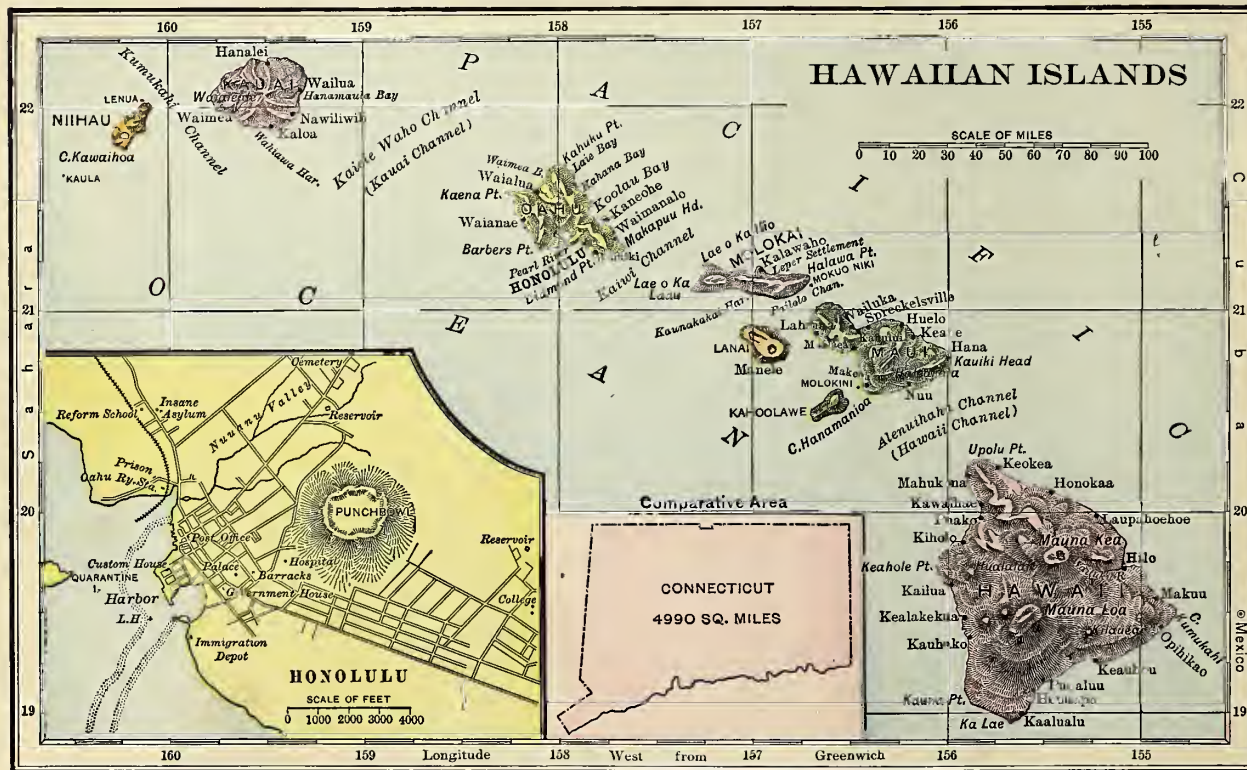


Lake of Lava, Hawaii.

largest. It is built on a fine harbor on the north coast, and is the capital of the island.

Ponce, the largest city near the south coast, is connected with the capital by a military road running across the island. San German, Mayaguez, Aguadilla, near the west coast; Arecibo, on the north; and Guayama, on the south, are other important trade centers.

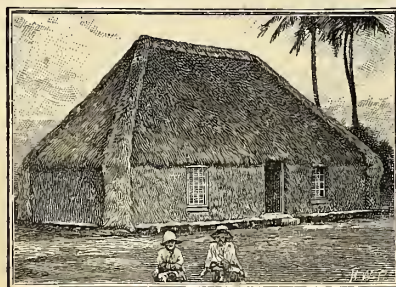
HAWAII. Far out in the Pacific, in about the same latitude as Cuba and Puerto Rico, and about 2000 miles from San Francisco, lie the islands of the Hawaiian group. There are eight principal islands and a number of



Hawaiian Islands.

belt of coastal region consists of level tracts, or savannahs, alternating with uneven ridgy areas. Puerto Rico, like Cuba, is in the torrid zone and has the wet and the dry seasons of that zone; but Puerto Rico is noted for its health-

ful climate, in contrast with other islands of the West Indies. The beautiful hill regions afford relief from the intense summer heat of the lowlands.



Native Hut, Hawaii.

The river valleys and coast plains of Puerto

rocky islets in the group. The total area is about 6500 square miles. The large island of Hawaii embraces three fifths of this area and gives its name to the entire group.

Thus it is proper to speak of the group as Hawaii or as the Hawaiian islands. The islands extend northwest and southeast for about 400 miles. They are of volcanic origin, and are built up from the ocean bottom, which is here 16,000 to 18,000 feet below the surface of the sea.



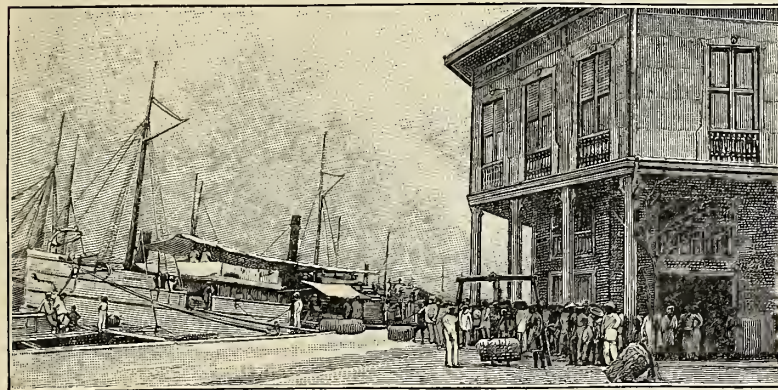
Native Girls, Hawaii.



Shrimp Fisher.

On the island of Hawaii rise two of the highest peaks in all the Pacific isles — the volcanoes of Mauna Kea (13,800 feet) and Mauna Loa (13,600 feet). The height of these peaks from the ocean bottom is greater than the height of Mt. Everest above sea level. Mauna Loa is active. On its east slope is the huge active crater of Kilauea, world-famed for its size and for the grandeur of its seething lake of molten lava. There are other active craters on the island, and earthquakes are frequent. Several violent eruptions have taken place in recent years both on the land and in the border bays. Thousands of persons visit Hawaii every year to study the volcanoes and hot springs, as well as to observe the people and enjoy the mild climate.

Though most parts of the islands are rugged with cones, ridges and other forms of old lava flows, there are also many open valleys of great fertility. The rich soil is well watered,



Hemp Press, Manila.

and the vegetation is luxuriant. Tropical fruits abound; sugar and rice are the chief exports.

The natives of Hawaii are a happy, light-hearted race, resembling in features the Maoris, or brown people of New Zealand. The Hawaiians are more intelligent than any other natives of the Pacific islands. When Captain Cook visited the islands, about a century ago, the number of natives there was about 200,000. Only about 30,000 now remain. There are also about 10,000 half-castes, 20,000 Chinese, 25,000 Japanese, 15,000 Portuguese, 4,000 Americans and a few thousand white people of other nations. There are many schools in Hawaii, and the children receive a fair education. There are excellent higher schools in Honolulu.

Various chiefs, kings and queens ruled Hawaii until July 4, 1894, when the white people of the islands formed a republic. In 1898 the islands were annexed to the United States.

Honolulu. This city is the capital and chief port of the islands. It is finely located on a deep harbor on the south side of Oahu. The

largest ocean steamers can lie along the great quays, to load or unload. In recent years Honolulu has made rapid progress. It has tramways, electric lights, telephones, beautiful public buildings and homes. Owing to its mild even climate, this city is a favorite resort for tourists. It has good steamship connections with San Francisco and the Orient.

Hilo is an important town on the island of Hawaii.

The island of Molokai contains a leper settlement. Leprosy is the worst scourge among the natives, and the victims are sent to Molokai to prevent the spread of the disease.

PHILIPPINES. Another group of tropical islands, the Philippines, came under the protection of the United States at the close of the war with Spain. This great archipelago was discovered by Magellan during the famous first voyage round the world. Only one of his ships reached home; Magellan was killed in the Philippines.

This group of islands is southeast of Asia and partly encloses the China sea. There are eleven principal islands in the group. The largest is Luzon, with an area nearly equal to that of Pennsylvania; next in size is the southern island of Mindanao, nearly as large. The total area of the group is thought to be 114,000 square miles — an area about equal to that of all New England plus New York state. Being on the line of great volcanic activity, which is very marked between Japan and Java, the Philippines often suffer from eruptions and earthquakes. The islands are largely built of volcanic rock and contain active peaks, as well as hot springs, old and new lava flows, huge fissures and other proofs of former volcanic activity. The mountain ranges have in general a northerly trend, bending to the northwest in some of the islands. The highest peaks rise only a little more than a mile and a half above the sea.

Though most parts of the islands are hilly or mountainous, there are river valleys, slopes and plains of wonderful fertility. Here, as in most tropical lands, the wet season comes in summer, — or from May to October, — with some rain during the other months. Lakes, rivers and smaller streams abound and combine with mountains and forests to give beauty to the scenery.

The climate of the Philippines is tropical, but with the great length of the archipelago north and south comes variety in heat and rainfall. The large island of Luzon and its smaller border isles have bright skies, with cool and



Family of Negritos.



Filipino Woman.

dry air, during the winter months. Even in summer the sea breezes and many cool nights bring relief. The climate of the northern islands is healthful. Most of the sickness among white people visiting them is caused by over-eating fruits, drinking alcoholic liquors or using fat, heat-giving foods. Care must also be taken to protect the body against sudden chills. The southern islands have of course hotter weather than the northern, but the former are free from the terrible storms, called *typhoons*, that sometimes sweep over the latter during the hot months.

With plentiful heat and moisture, these islands have luxuriant vegetation. Hills and plains alike are buried in foliage. Trees of many varieties yield dyes, gums and cabinet woods. The cocoanut palm and bamboo thrive throughout the islands, and are put to an infinite number of uses. The cocoanut is an important article of food for the natives. Here, as in Cuba, tobacco and sugar are leading products, but the staples for which the islands have long been noted are fine tobacco and *Manila hemp*, the latter being a fiber used for making rope and twine. This is not true hemp, but is the fiber of a kind of banana plant. It is hardy and grows best in the hilly regions and in the weathered volcanic soils. "The crude native implement for preparing the fiber is still the only one in use; it consists of a rough wooden bench with a long knife-blade hinged to it at one end and connected at the other to a treadle. Strips of the plant are drawn several times between this blade and the bench, which removes the pulp and outer skin, leaving the fiber, which is then cleansed by washing, dried in the sun, and packed for shipment." — *National Geographic Magazine, Washington, June, 1898.*

Large crops of rice are raised in the Philippines and used there for food. Bananas are also a staple food product. The orange, pineapple and other tropical fruits grow in abundance.

Although the neighboring island of Borneo has large wild animals, such as the elephant, the tapir and the orang-outan, these are not found in the Philippines. The only beasts of prey are small wildcats. The wild buffaloes and wild hogs in the islands are thought to have descended from tame animals that escaped to the woods. The most useful animal is the tame buffalo, known as the water buffalo, from its habit of rolling in water. It is used to draw the rude plows and carts, as well as to carry burdens on its back. Sheep and goats are also reared; monkeys, huge bats, birds, snakes and insects abound.

Careful study of the mineral resources has not yet been made, but it is known that gold, iron, copper, zinc, sulphur and coal promise a rich reward to future miners in the islands.

The primitive people of the Philippines are thought to be the *Negritos*, a dwarfish black race now found in the mountains of Luzon and Negros islands. They have the frizzly black hair, thick lips and wide nostrils, such as are seen among the black natives of New Guinea. The *Negritos* were long ago hunted from the lowlands, by stronger people of the brown race, — the Malays, — and now wander over the ranges and through the

forests, without fixed homes, eating wild fruits and sleeping wherever they may be when darkness comes on.

Of the seven or eight million natives of this great archipelago, nearly all are Malays. In some parts of the islands they are called *Filipinos*. For the most part the natives are peaceable but brave, as well as honest and courteous.

The Malays of the cities and towns are bright and intelligent, but the people of forest and mountain tribes are "simple children



of nature." On many of the islands the natives are little known, and some of them are fierce and warlike.

Many of the tribes of the interior live on wild fruits, fish and game, with little thought of tilling the soil. The lance, bow and arrows are native weapons. During the dry season entire tribes wander through the forests, sleeping without other shelter than the trees; others make rude huts of rattan or palm leaves; still others settle in villages and make huts of bamboo, palm or rattan. On the various islands the natives differ in intelligence, beliefs, habits and modes of living.

Many Chinese have settled in the larger towns and cities. They are thrifty and carry on most of the local trade and banking. A few thousand Spanish and other people of the

white race live in Manila, Iloilo and other towns. Nearly all the large towns are on the seacoast.

Manila. Manila, having a population of about 200,000, is the capital and largest city of the archipelago. It is situated on a fine bay, at the mouth of the Pasig river, the outlet of Bai (or Bay) lake. The older part of the city is on the south bank of this river; the newer part is on the north side. The modern buildings are mostly low and built of wood, as they withstand earthquake shocks much better than high stone structures. The greater part of the foreign trade of the islands passes through Manila.

The second port in importance is Iloilo, on the island of Panay. In exchange for hemp, tobacco and sugar, the islands import mainly rice, flour, cloth, coal and kerosene. The foreign trade amounts yearly to about \$30,000,000 — one sixth being with the United States. A large part of the trade is carried on with Great Britain.

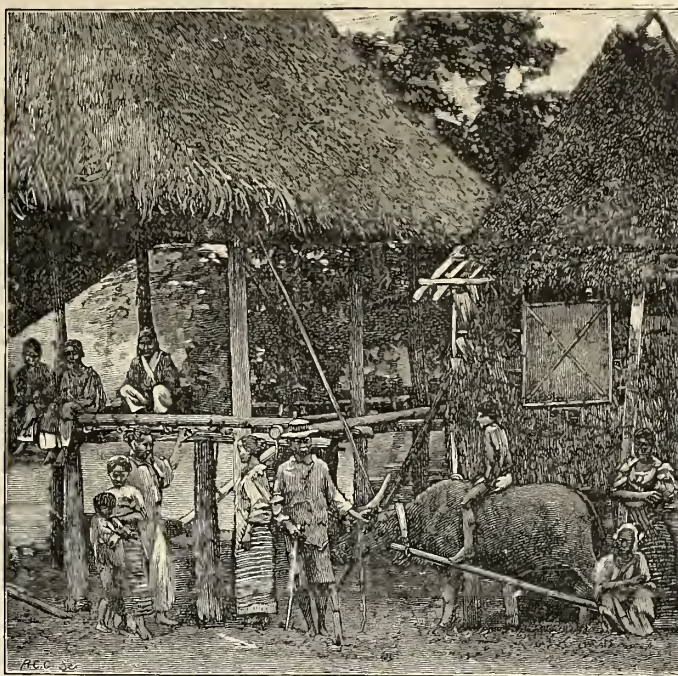
GUAM. Almost due east of Manila, about 1600 miles out in the Pacific, rises the island of Guam. It is the southernmost of a chain of islands stretching northward for about 500

miles (see inset on map of *Philippines*; also full-page map of *Australia, Micronesia, etc.*). Magellan named these the *Ladrones*, or *thieves' islands*, because the natives stole some of his

goods. The islands are small and mostly volcanic, some having active craters. The climate resembles that of Hawaii. The total area is only 420 square miles, with a population of 10,000. Most of the people live on the island of Guam — fully half of them being in the capital town of **Agaña**. At the close of the recent war with Spain, Guam was ceded to the United States. The island is the largest of the group, being about 100 miles in circuit and 30 miles in length, and has a fringing coral reef. When first visited by Magellan there were probably 50,000 natives in the *Ladrones*; under Spanish rule the race became extinct. The present natives are descendants of Philippine tribes.

They have several schools, and most of the inhabitants can read and write. A few white people live in Agaña.

Guam has no foreign trade, as it does not lie in the path of ocean steamers. The island will be made a coaling station and base of supplies for ships of the American navy.



Filipinos (Philippine Natives) and Buffalo.

Pronouncing Word List.

Key: äle, ät, ärm, final; ēve, ēnd; īce, īll; ōld, ōn; ūse, ūp; fōōd; ch as in chop; g as in go; th as in thin; ow as in cow.

Agaña, ä-gän'yä.
Aguadilla, ä-gwä-däl'yä.
Antilles, än-til'lez.
Arecibo, ä-rä-sē'bō.

Balanga, bä-läng'gä.
Baracoa, bä-rä-kō'ä.
Batabanó, bä-tä-bä-nō'.
Bayamon, bä-yä-mōn'.
Bohol, bō-hōl'.
Bulacan, bōō-lä-kän'.

Caimanera, kī-mä-nä'rä.
Cardenas, kār'dä-näs.
Cavité, kä-vē-tä'.
Cebu; see Zebu.
Cienfuegos, sē-ēn-fwä'gōs.
Corrientes, kōr-rē-ēn'tēs.
Culebra, kōō-lä-brä.

Espiritu Santo, ēs-pēr-rē-tōō
sän'tō.

Guam, gwäm.
Guanabacoa, gwä-nä-bä-cō'ä.
Guantanamo, gwän-tä'-nä-mō.
Guayama, gwi-ä'mä.

Hawaii, hä-wi'ē.
Hilo, hē'lō.
Holguin, hōl-gēn'.
Honolulu, hō-nō-lōō'lōō.

Iloilo, ē-lō-ē'lō.
Isla de Pinos, ēs'lä dā pē'nōs.
Isla de Vieques, ēs'lä dā
vē-ä'käs.

Jucaro, hōō-kä'rō.

Kahoolawe, kä-hō-ō-lä'vā.
Kauai, kow-i'ē.
Kealakekua, kä-ä-lä-kä-kōō'ä.
Kilauea, kē-low-ä'ä.

Ladrones, lä-drōnz'.
Lanai, lä-nä'ē.
Leyte, lä'ē-tä.
Luzon, lōō-zōn'.

Maestra, mä-äs'trä.
Manila, mā-nil'ä.
Masbate, mäs-bä'tä.
Matanzas, mā-tän'zas.
Maui, mow'ē.
Mauna Kea, mow'nä kä'ä.
Mauna Loa, mow'nä lō'ä.
Mayaguez, mi-ä-hwēs'.
Maysi, mi'sē.

Mindanao, mēn-dä-nä'ō.
Mindoro, mēn-dō'rō.
Molokai, mō-lō-kī'.

Negrito, nē-grī'tō.
Negros, nā'grōs.
Niihau, nē-how'.
Nuevas, nwä-vē'-täs.

Oahu, ō-ä'hōō.

Pago, pä'gō.
Palawan, pä-lä-wän'.
Pampanga, pä-m-pän'gä.
Panay, pä-ni'.
Pasig, pä-sēg'.
Philippine, fil'ip-in.
Pinar del Rio, pē-när' däl rē'ō.
Ponce, pōn'thä.

Puerto Principe, pwēr'to
prēn'sē-pä.
Puerto Rico, pwēr'to rē'kō.

Rio Cauto, rē'ō kow'tō.

Sagua la Grande, sä'gwä lä
gran'dä.
Samar, sä-mär'.
San German, sän hēr-män'.
San Juan, sän hōō-än'.
Santiago, sän-tē-ä'-gō.
Subig, sōō-bēg'.
Sulu, sōō-lōō'.

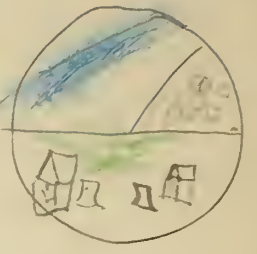
Trocha, trō'chä.

Zebu, zē-bōō'.

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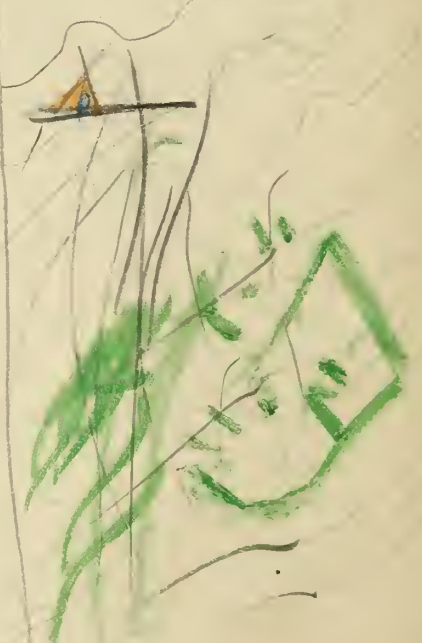
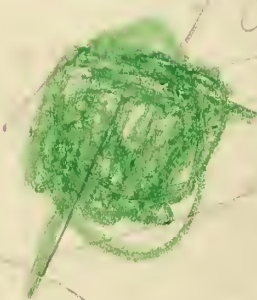


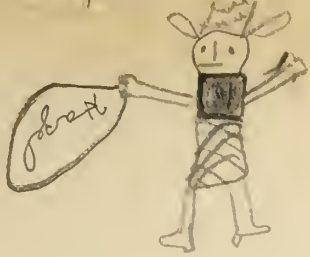
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Oh! Girls remember Feb. 14 - 1903



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Drawing
From Hazel
Whitehurst.



Harriett Ruppert.
Orangerville
Ind.

Feb. 14. 1903.





There's just a
pilot says.

Monday Lesson.
Two U. S. Senators.
Represent.

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